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EDITORIAL.

EUROPEAN CHRONICLES.

FASHIONS IN HORSE BONNETS.—Years ago, certainly over ten, our people will remember the good Samaritan truck or car-drivers of our large cities would during the hot days of summer try to give some protection and comfort to their horses in guarding them from the rays of a burning sun. At first it was a broad cabbage-leaf; afterwards came a sponge, kept moist now and then, when water was handy, and towards the last few years came the more stylish straw hats; what they have now grown into we do not know.

But, see how the fashion changes. Heretofore Europe was the leader, and from Europe all novelties would travel to America. It seems that with sun-bonnets for horses, the fashion has now travelled from America to Europe, and in the *Veterinary Record* of last September we read that London is probably "the only English town which has, even in a small degree, adopted the ugly and useless incumbrance." Our worthy *confrère* gives, however, a singular history as the origin of that habit in England.

"Some sentimental woman [of England, we suppose] who had joined a Cook's tour to Rome, saw a mule wearing an old woman's damaged bonnet. She asked the owner what it was for, and he intelligently but untruthfully told a tale of sun-stroke prevention. He was rewarded in coin, and the lady forthwith wrote home an account of how horses were protected

from solar heat in Southern climates. A maker of straw hats saw his opportunity and put a few on the market. A firm who own horses and who never miss a chance of being up to date ornamented their van-horses with the attractive head gear * * * and others followed suit. Thus from an Italian joke, through a stupid woman's sentiment and a business man's quickness to seize a novel advertisement, we have the straw bonnet for horses."

This fashion, which our colleague criticises rather severely, and which he hopes will soon disappear, also made its appearance in a very extensive manner last summer in Paris, and the sale must have been very large, as truck and cab horses were seen passing through the streets, horses happy, drivers joking, some people applauding, while others, on the contrary, were ridiculing the idea.

At any rate, we think America has here again been the promoter, as she is in so many things, and it is quite unfair for Italy to have the benefit of the first application, which England as well as France have only begun to use this year. Whether it is advantageous, is a question which may be difficult to settle, but it must be hoped that the fashion will not give rise to the creation of special millinery shops for horses.

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VETERINARY DENTIST TO HIS MAJESTY'S HORSES.—In years gone by veterinarians were satisfied to remain veterinarians, and for those who practised in those days it meant treating domestic animals in the wide sense of the word, when suffering with diseases. The veterinarian would then attend to internal diseases, perform operations, deliver pregnant animals; he would look after contagious diseases, give advice in breeding, etc., etc. The veterinarian treated horses and the like, cattle, sheep, pigs, dogs, etc.

Then came the day when some one found that these attributes were too many—that having to know so much of everything, he knew almost nothing—that diseases were not the same in all species of animals, etc., etc.—and then began the

separation and started the great subdivision of specialties, which from that of equine, cattle, and canine practitioner has brought to light others, such as those who are surgeons before anything else, or obstetricians or sanitarians, down to the specialty of dentistry.

We believe again that horse dentistry is specially of American origin ; at least, if it is not, we doubt if any horse dentist has obtained a greater name and reputation than some of our American horse dentists. Has any been superior to House in his day? With all that, the title has received in England a greater recognition than in any other country, we believe, and the announcement has been made that a Mr. J. M. M. has received a Royal Warrant as the King's Horse Dentist.

This appointment has created a great sensation in the veterinary world of England, and severe criticisms are found in some of the professional papers ; but of what use?

The worthy editor of the *Veterinary Record*, in some well appropriated but severe remarks, writes with perfect right that "Horse dentistry cannot be separated from veterinary surgery, and for the highest personage in the land to ignore veterinary surgeons and select a trainer of horses to look after equine teeth is a gross insult to a body holding a royal charter."

We sincerely approve of these remarks, and hope that this royal sanction will not be allowed to figure on the card of the specialist alluded to, as a means of advertisement, so commonly used by workshops on the Continent and in England.

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MORTALITY REDUCED BY ANTIDIPHTHERIC SERUM.—From the comptes rendus of the work done at the Pasteur Institute of Lille (France) in 1900, the results of the prophylaxy and treatment of diphtheria by serotherapy is shown. The benefits derived from the gradually spreading use of antidiphtheric serum on the mortality and morbidity in that city is most striking. The course of the mortality is regularly going down since 1894, because most of the cases treated on the first or second day remained benignant and are not generally declared. Besides this,

the preventive use of the serum, to avoid contagion in families, is becoming more and more generalized, and on that account the number of cases diminishes.

MORTALITY FROM 1888 TO 1900.

Before Serotherapy—		*After Serotherapy*—	
1889 . . .	123 deaths.	1895. . .	42 deaths.
1890 . . .	103 deaths.	1896 . . .	31 deaths.
1891 . . .	90 "	1897 . . .	26 "
1892 . . .	117 "	1898 . . .	37 "
1893. . .	114 "	1899 . . .	28 "
1894 . . .	106 "	1900 . . .	18 "

From 1888 to 1894, six years, the total of deaths has been in the city of Lille 653, an average of 109 a year. From 1895 to 1900, six years also, the number of deaths has been 182, an average of 30 a year. These figures will no doubt be lowered when physicians no longer hesitate to inject the serum in cases of suspicious sore throats, rather than wait until the bacteriological examination of the false membranes has established the diagnosis. As curative or preventive, the antidiptheric serum cannot give rise to any serious accidents, and, on the contrary, offers incontestable advantages.

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"WHITE SCOURS" AND ITS HISTORY.—In a short editorial of the *Veterinary Record* I have found the following as being taken from the *Veterinarian*, vol. XI, p. 613:

"*Violent Diarrhœa, with Inflammation of the Umbilicus.*—During this year there has frequently appeared among calves and foals a violent and to all appearances an inflammatory diarrhœa, which, if not suppressed in time, destroyed them. In the post-mortem examination of these animals the essential difference observable was always an inflamed state of the umbilical artery from the navel to the bladder. The parietes of the bladder were very much thickened and softened, and a collection of matter was found under its peritoneal covering. The only specific and sure medicine to be given to young calves and foals affected by the disease is the kal. sulphuratum (sulphurated potash or liver of sulphur), of which half a teaspoonful at a time may be administered."

From this, says the author, it will be seen that scour connected with omphalitis was recognized in 1838.

This is very well. From this it is quite certain that Prof. Nocard may not have been the first to attribute "white scours" to the diseased condition of the umbilical cord; but, nevertheless, it is he who has found the true cause of the disease, its correct mode of entrance into the organism, that has established the fact of the relationship existing between the manifestations of the digestive apparatus and those of the respiratory. And, finally, it is also to his investigations and his suggestions that the successful treatment, curative and prophylactic of the two forms of disease, is due. A. L.

A NEED—AN OPPORTUNITY.

The fact that the great State of New York, with its vast live-stock interests, with a record of leadership in all progressive movements looking to the preservation and betterment of the health and wealth of its people, is the most notable example of a State without an adequate veterinary staff to guard its herds and flocks against the dangers from contagious diseases, has for some time been a matter of concern and discussion among those who appreciate the great good that such organizations accomplish in other commonwealths and in other countries. First among the States of the Union to enact a law to protect legitimate practitioners, first also to place the standard of veterinary education on a plane so high that no other State has dared to follow its example, it is indeed a subject of wonderment that she has not felt it her duty to utilize the members of that profession to the great financial advantage of her immense investments in horses, cattle, sheep, and swine. But a small number of the great stock-raising States of this country are in a similar backward condition, and every few months we are called upon to record a step of material advancement in this line in some of them. But the Empire State pursues the even tenor of her way, without a thought for the welfare of this great source of wealth, and if there is an outbreak of a disease which

threatens to depopulate this industry in any section of the State, the stockman must fight his battle single-handed, with the aid of whatever private practitioner he can find, whether he be a man with experience in this line, or a novice.

Numerous spasmodic and individual efforts have been made to secure legislation looking to the creation of the office of State Veterinarian, or the establishment of a State bureau of animal industry, but none have had behind them a united effort of the rank and file of the profession, nor have they been pursued with that earnestness and unanimity which command attention and enforce acquiescence.

The New York State Veterinary Medical Society at its late meeting in Ithaca took the initiative in a renewed effort to accomplish this tardy obligation to the live-stock interests of the State by passing a resolution embodying the sense of the society that the office of State Veterinarian was urgently needed, and it instructed its secretary to take certain steps toward bringing the matter to the attention of the legislature. We fear, however, that the effort will be without much success, as it simply throws the whole work upon the shoulders of one man, who can do but little at best in this direction through his unaided though earnest exertions. He will undoubtedly carry out to the letter the instructions of the resolution, but there the matter will end.

There has just been elected to the lower house of the Legislature from the city of Brooklyn a veterinarian who has had long experience in the line of seeking and securing legislation favorable to the veterinary profession. He is, in fact, the father of the first law ever enacted in the State of New York recognizing such a profession, and, we believe, the first law of the kind ever passed in America. Dr. William H. Pendry, a graduate of the American Veterinary College in the early eighties, is the man who accomplished so much for us at a time when it was sorely needed, and we believe he is the Moses who can lead the veterinary hosts to success now through his greater opportunities. A few years ago he introduced such a bill, but he sought

to accomplish its passage without first enlisting the support of the entire profession of the State, and it never left the committee to which it was referred. Now, however, we have the State Society, of which Dr. Pendry is a member, pledged to its support, and with him, as its champion, they should make an irresistible combination, which will never rest until the animal industry of the Empire State is properly guarded against the ravages of the very many scourges which cause greater financial losses yearly than would support such a veterinary guardianship for a decade.

The hour, the man, and the opportunity are upon us. What are we going to do about it?

WORK OF THE BUREAU OF ANIMAL INDUSTRY.

Secretary of Agriculture Wilson has transmitted to the President, under date of November 23d, his report for the year 1901, and it is the most voluminous and comprehensive statement of the affairs of this department ever issued. A large portion of the report covers the subject of animal industry. The grand total of animals and animal products exported during the year exceeded $250,000,000 in value. This vast foreign market is only preserved to our producers by the indefatigable efforts of the department and the rigid inspection exercised through the Bureau of Animal Industry. This bureau inspected for export 385,000 cattle, 228,000 sheep, and 48,000 horses and mules, and nearly 1000 vessels carrying live stock. Imported animals were also inspected to the number of 342,000, and, where necessary, quarantined. The Secretary suggests that with the enormous interests our stock-raisers have at stake, and inspection or quarantine affording after all, a relative, not an absolute guarantee of protection, it might be well for this country to follow the example of Great Britain and exclude live stock from other countries entirely. The meat inspection service involved the inspection at time of slaughter of nearly 37,000,000 animals. Of the more than 5,000,000 cattle inspected, the condemned carcasses were about one-fourth of 1 per

cent.; of the 6,500,000 sheep, one tenth of 1 per cent.; and of 24,000,000 hogs, one-third of 1 per cent. In the control of indigenous diseases, 1,500,000 inspections were made and over 45,000 cars disinfected in the Texas fever service alone. In the repression of scabies in sheep nearly 8,000,000 animals were inspected, and over 1,000,000 dipped under the supervision of the department inspectors. In combatting the disease known as "black leg" the bureau distributed over 1,500,000 doses of vaccine, the result being to reduce losses in affected herds to less than 1 per cent., where formerly it was in most cases about 10 per cent. To aid in detecting tuberculosis in cattle and glanders in horses, over 44,000 doses of tuberculine and 7000 doses of mallein have been supplied. The Secretary points out the serious evil resulting from a system of State inspection which, if it became general, would effectually prevent the marketing of live stock in some sections, and would destroy much of the usefulness of the Federal inspection. He regards the present conditions as so menacing to the interests of the cattle industry in the West and Southwest that he has requested the Attorney General to coöperate in bringing the matter before the Supreme Court for decision as to the constitutionality of these State laws. This request has been favorably received and the assistance of the Department of Justice promised.

FOR THE STUDY OF CONTAGIOUS DISEASES.

An addition of great interest has just been made to the Alfort School, France, which will prove one of great attraction to foreign veterinarians. That is the buildings erected for the new *institute for study and research relating to all contagious diseases* and principally to that which occasions such great losses all over the continent, and which seems to baffle all sanitary measures, viz., foot-and-mouth disease.

We have visited the institute and have already had the pleasure to act as *cicerone* for some of our American friends. The new institute consists of a number of pavilions isolated from each other and subdivided into boxes, also perfectly isolated.

The walls of the boxes are made of hard cement, the corners rounded to prevent collection of dirt, and thorough washing is done readily. The feeding and watering is made by automatic arrangement, and isolation of the animal is perfect. There is accommodations for removal of the cadavers for the post-mortems, for the destruction of cadaveric remains with sulphuric acid, for disinfection of the manures, etc. The whole ground upon which the institute is built is surrounded by walls, and to guard against the possibility of contagion being carried by cats, wire work is arranged on the top of the walls so as to prevent their entering the premises. In fact, those stalls are perfectly disposed for thorough isolation. A most perfect cellular jail.

Work has already been started. Of course, no one is allowed to enter unless he submits himself to all the measures which will prevent him from being a means of contagion, but we may nevertheless be able to keep our friends posted as soon as some results are obtained. A. L.

VETERINARY EDUCATION IN GREAT BRITAIN.

At the opening of the three veterinary colleges of Great Britain (at London, Glasgow, and Edinburgh) in October, there appeared to be a concerted effort put forth by the Principals in their introductory addresses to bring the question of university affiliation prominently before the public. The schools of that country are maintained solely by private effort, and it is high time that a helping hand should be extended to the colleges in their long struggle for recognition and support. The universities have recently been largely endowed through the generosity of Andrew Carnegie and other philanthropists, and it is a blot upon their sense of justice and progressiveness that the government and the universities continue to ignore the claims of the science of comparative medicine. While American institutions have often been constrained to complain of the frosts of neglect by the state governments and charitable individuals, they have fared infinitely better than our brethren of Great Britain. We

sincerely trust that the effort now being made may be crowned by success.

THE KING OF ENGLAND has appointed the following committee to investigate Prof. Koch's theory as to the non-transmissibility of bovine and human tuberculosis: Sir Michael Foster, Secretary of the Royal Society; Dr. Sims Woolhead, Prof. Pathology, Cambridge University; Dr. Harris Cox Martin; Prof. J. McFadyean and Prof. R. W. Boyce. The committee is urged to make thorough investigation and to report promptly.

IT is expected that Dr. M. E. Knowles, State Veterinarian of Montana, will present the resolutions referring to tuberculosis at the coming meeting of the National Live Stock Association, which meets in Chicago this month. It is probable that there will be a lively discussion upon the subject, as there is considerable opposition to the continuance of the tuberculin test by the government by certain men claiming to be stock-breeders, but who are, as a matter of fact, importers. The resolutions will, no doubt, be along the lines adopted by the last meeting of the A. V. M. A.

THE NATIONAL HORSE SHOW, held at Madison Square Garden, New York, Nov. 18 to 23, was the greatest in all respects of any in the nineteen years of its existence, and decidedly the most notable exhibition of the year, attracting great crowds night and day, which displayed the keenest interest in the events transpiring in the arena. The good which the numerous equine exhibitions have conferred upon this industry is incalculable, stimulating the liveliest competition in the breeding of the finest specimens of the various types of horses, and the rivalry of the wealthy owners to secure the coveted blue ribbon sends the prices soaring. When such an animal becomes sick or disabled the veterinarian comes in for his share of the benefits which first started in the horse show.

ORIGINAL ARTICLES.

TRANSMISSION OF TUBERCULOSIS THROUGH MEAT AND MILK.

By John J. Repp, V.M.D., Ames, Iowa.

Professor of Pathology and Therapeutics, and Veterinarian to the Experiment Station, Iowa State College.

(*Concluded from page 634.*)

B. By Milk.

1. By Artificial Methods.

No evidence.

2. By Natural Methods..

The evidence of transmission in this manner consists of recorded observations which have been made in cases of human beings who have used the milk of tuberculous cows.

Olivier[46] reports that in a young ladies' boarding school 5 girls, the children of healthy parents, died of tuberculosis of the intestines. The cow which had for years supplied the school with milk was found to have generalized tuberculosis including the udder.

Two daughters of a Scotch family of good health who were brought up on milk of tuberculous cows died of tuberculosis. Two sons in the same family who did not use the milk remained healthy.[47]

Stang[48] reports the case of a five-year-old boy of sound parentage and ancestry who died of tuberculosis. The cow whose milk this boy used was found badly tuberculous.

Demme[49] reports the cases of four infants in the Children's Hospital at Berne, the offspring of sound parents, that died of intestinal and mesenteric tuberculosis. He was able to exclude all other sources of infection and to decide that they had been infected by the ingestion of the milk of tuberculous cows.

Hills[50] mentions the case of a child 21 months old, of a

friend of his, which drank the milk of a highly tuberculous cow for one week while on a visit to his uncle, and three months later this child died of intestinal tuberculosis. Other sources of infection could be excluded. A second child brought up on sterilized milk is still healthy.

Hills[51] also reports the death of a boy 4 years old at Yonkers, New York, from tubercular meningitis. The infection was traced to the milk of 2 cows of whose milk this boy had drunk and which proved on autopsy to be tuberculous.

Ernst[52] reports the death of 3 children of one family from tuberculosis. These children had used the milk of a cow which later died of advanced tuberculosis including the udder.

Leonhardt[54] reports the death from tuberculosis of the meninges, intestines, and mesentery of 2 children fed on milk of a tuberculous cow.

Sontag[55] reports the case of a six-months-old child of healthy parents which died of tuberculosis and which had been fed on the milk of a tuberculous cow.

Hermsdorf[56] has reported the case of a child dead of intestinal tuberculosis which had been fed on the milk of a tuberculous cow.

Rich[57] reports that a young man of healthy parents who died of tuberculosis had used plentifully of the milk of a herd of 74 cattle, 65 of which were tuberculous, some of them markedly so. Also, another young man died of tuberculosis. Two months later Rich destroyed 80 cattle out of the herd of the family, that is, about 90 per cent. of the entire herd. Also, a young woman died of tuberculosis, and a month later the cow whose milk she had used died of advanced tuberculosis.

Thorne[58] reports that 22 physicians out of 339 practising in Ohio replied in the affirmative to the question, "Have you been able to trace any cases of tubercular disease to the milk of unhealthy cows?" and that 33 replied affirmatively to the question, "Have you had reason to suspect the origin of tubercular disease in older children or adults to be in the milk- or meat-supply?"

This series of experiments and observations has been selected from literature with the greatest care. Any reports which appeared not to be well authenticated or of a doubtful nature have been excluded. Besides this mass of positive evidence there is much more, that, while not so positive, is not less convincing. It appears that the evidence collected by Thorne from physicians in Ohio is especially valuable, not only in itself, but because it indicates what might be learned by addressing the same series of questions to physicians throughout the world.

Still further corroborative evidence is offered in the fact that such great numbers of bottle-fed children die of abdominal tuberculosis, and in the fact that tuberculosis of adults is decreasing in many places, while tuberculosis of infants and small children does not show this marked decrease, and is, in fact, increasing. Death from tuberculosis in all its forms in England and Wales has decreased 39.1 per cent. in the past 35 years. The greater part of this diminution was in the lung forms of this disease; for the same period the intestinal form has decreased only 8.5 per cent. It is noteworthy that in the same period, the increase in abdominal tuberculosis in children under one year has been 27.7 per cent. Northrup[59] and Still[60] have presented statistics of autopsy in children which show that the pulmonary form of the disease is most common; that is, that the pulmonary lesions are primary, thus refuting the conclusion of most other pathologists also based on autopsy. Koch[61] in his very recent (July 23, 1901) address before the British Congress on Tuberculosis, has made reference to the findings of several physicians, including himself, in support of a similar allegation. This difference of conclusion can hardly be accounted for, except upon the supposition that it is due to a difference in judgment among pathologists, as to what is a primary and what a secondary lesion. This is a point on which the pathologist must exercise great care. He must not in this connection overlook the fact that, even though the most marked lesions appear in the thoracic cavity, this does not exclude primary infection by way of the digestive tract, because, as is well known, the infective

agent has easy channels of passage from the abdominal cavity into the thoracic cavity by way of the thoracic duct and the vena cava.

Theobald Smith[62] calls attention to this migration of the disease, as having been observed by him and others (Spengler) experimentally. Even assuming the conclusions of Northrup and Still to be correct, although they are contrary to the opinions generally held, there is still left a large percentage of cases to be accounted for by intestinal infection. In 269 tuberculous children on which Still made autopsies, he considered that the channel of infection was the intestine in 53 cases, and the lung in 105 cases. This is enough to warrant the most earnest crusade against the source of such infection.

However, neither animal inoculation, with its unmistakable results so far as the animals themselves are concerned, nor the recorded observations of almost doubtless transmission to man through the milk and meat prove, with the positiveness of a demonstration, that tuberculosis is transmissible to man through the milk and meat. Yet, to nearly all students of this subject, this is convincing proof, and we find the results of it in the protective legislation which everywhere abounds.

We have still further and more valuable evidence which may now be taken up.

Whether or not tuberculosis of animals is transmissible to man, depends upon whether or not the tubercle bacillus of the animal species is pathogenic for man. If this could be demonstrated, we would have a positive proof that would be beyond all question. We know that the virulent tubercle bacillus of the bovine species exists in the meat and milk products of these animals in many cases where they are tuberculous, and we know that man consumes these products thus bearing the bacillus. Therefore, if the pathogenicity of this animal tubercle bacillus for the human species can be proved, the question is no longer debatable. The following examples are offered for consideration. In my opinion they are capable of supplying the evidence we need.

Tscherming[63], of Copenhagen, attended a veterinarian who had cut his finger in making an autopsy on a tuberculous cow. The wound healed, but there remained a swelling which soon ulcerated, and refused to heal, so that the whole tumefied mass had to be cut out. The microscope revealed the distinct tuberculous process, and the presence of the characteristically staining bacilli.

Pfeiffer[64] attended, at Weimar, a veterinarian named Moses, 34 years old, of good constitution, and without hereditary disposition, who, in 1885, cut his right thumb deeply in making an autopsy on a tuberculous cow. The wound healed, but six months later the cicatrix still remained swollen, and in autumn, 1886, the man had pulmonary tuberculosis with bacilli in his sputa and death occurred in $2\frac{1}{3}$ years after the wound. Post-mortem revealed tuberculosis of the joint of the wounded thumb, and in the lungs extensive tubercles and vomicæ.

Law[65] reports that a young veterinary friend of his who was inoculated in the hand in opening a tuberculous cow, suffered from a tumefaction of the resulting cicatrix, with tubercle bacilli.

Rich[66] reports that a man cut his finger on a spicula of bone while making a post-mortem examination of tuberculous cows, and that in a few weeks he developed a tuberculous joint, and a few months later showed unmistakable signs of phthisis.

Ravenel[67] reports the case of a veterinarian who cut the knuckle of his finger while making a post-mortem examination of a tuberculous cow. The wound healed badly, remained swollen, and showed decided tendency to ulcerate. Removal of the cicatricial mass was practised and the tissues sent to him for examination. They showed typical tubercular lesions, with giant-cell formation.

I am well acquainted with this case myself and believe it to be an undoubted case of direct transmission of tuberculosis from cow to man by inoculation. This veterinarian told me that he did not become alarmed about the wound on his finger until he noticed a swelling and tenderness of the lymphatic glands on the inside of the elbow.

Ravenel[68] also reports the following two cases:

"On January 1, 1900, my assistant, Mr. G., while performing a post-mortem on a goat which had succumbed to experimental inoculation with a culture of bovine tubercle bacillus, scratched his knuckle on the broken ends of the ribs. Within a half hour the wound was washed out with a 1:1000 solution of mercuric chlorid, and sealed. It healed promptly, but about three weeks after became reddened, swollen, and sensitive, especially on motion. It was protected, but grew worse, and on February 27 Dr. C. H. Frazier excised the nodule, with a margin of healthy skin. With one half of the nodule we inoculated 2 guinea-pigs subcutaneously, and the other part was prepared for sections. These sections show an infiltration process which encroaches on the papillary layer of the skin, some of the papillæ being destroyed. No typical giant-cells can be made out. None of the sections were stained for tubercle bacilli. On May 5, one of the inoculated pigs died and the other was killed. Both of them showed a generalized tuberculosis involving the chest cavity as well as the abdomen. There has been no return of the lesion so far.

"The other case is that of a well known veterinarian of Philadelphia, who, in making an autopsy on a tuberculous cow, wounded the knuckle of his forefinger. Between 3 and 4 weeks after, the scar was noticed to be enlarged, reddened, and somewhat sensitive. As it showed no tendency to improve, but rather grew worse, some 6 weeks after it was first noticed it was excised by Dr. H. W. Cattell, and the wound cauterized with bromin, since which there has been no return. The nodule was examined by Dr. John Guiteras, who demonstrated its tuberculous nature by finding tubercle bacilli in sections."

Further evidence than this is not on record so far as I have been able to ascertain. Whatever our conclusions may be they must be drawn from this evidence together with some corroborative evidence of another character, which will be referred to later on. Those who are in search of more convincing evidence of the pathogenicity of the bacillus of animal tuberculosis for

man must be informed that it is not to be had without direct experimental inoculation or experimental feeding of members of the human species with tuberculous products of animals. That this is not likely to be done it is needless to state. It is not impossible that some one may apply to tuberculosis experiments of the same nature as those described by Arning[69], in which a criminal was inoculated with leprous material. Certainly this sort of experimentation might be done in case of criminals, but such experimental work can never be done in case of children. Hence, the relation between the milk of tuberculous cows and tuberculosis in children will never be decided on any evidence so positive as this.

Adami[70] considers as doubtful the conclusion that there has been a causal relation between the milk used and the tuberculosis of the persons using it, or between the wounds received while making autopsies and the subsequent tuberculosis in cases such as those cited in this article. He bases his opinion on the fact of the impossibility of total exclusion of all other sources of infection. One who puts forth such a statement as an argument does not realize the abyss of fatalism into which he would plunge science in all attempts at discovering the source of infection in case of any of the infectious diseases; especially would this be the case in such a chronic disease as tuberculosis. If the argument were valid, it would apply to all diseases. It is not possible to absolutely and totally exclude all other sources of infection in any case. To do this would demand on the part of the experimenter and observer a knowledge of all possible sources of infection, other than the one under consideration, that might be active in a given case; and, further, a knowledge of altogether hidden and entirely unknown causes which might act. Unless this were done the same objection might be raised, viz.: The other causes have not yet all been excluded; there may be some source of infection of which neither you, nor I, nor any one else has any knowledge. *Reductio ad absurdum!* All we can do, and all that it is necessary to do, is to exclude all known or probable sources. We must

decide upon an anchorage somewhere which the light of scientific knowledge points out. If we have done this, and get positive results in a sufficient number of cases, we have a legitimate right to draw conclusions accordingly. In the cases referred to it is to be considered that we have practically excluded all other sources of infection. Science does not require that more be done.

Some work has been done to ascertain whether or not there is any difference of morphology, character of culture, or virulence between the tubercle bacillus derived from man and that derived from animals, with the hope of incidentally shedding some light on the question of the transmissibility of tuberculosis from animal to man. It was taught by the earlier investigators from Koch forward, with few exceptions, that the bacilli from these two sources were virtually similar. This belief was held and taught until the recent experiments of Smith,[71] Pearson,[72] and Dinwiddie[73] were made, and which show that the bovine tubercle bacillus is distinctly more virulent for the species of animals thus far experimented upon than is the human bacillus, with a few exceptions in which no difference in virulence was seen. Theobald Smith is probably the only one who has made a comparative study of the bacilli from the bovine and the human source in culture and under the microscope of sufficient extent to be of any value. He has noticed some points of difference, but none that, so far as we know, have any bearing upon the question under consideration. It is true that if there is a marked difference between the bacilli from the two sources it may in time be found out that, by a careful study of the bacilli themselves, we shall be able to differentiate cases of human infection from cases of bovine infection in man by an examination of the respective bacilli. However this may be, such a stage has not yet been reached. It may be that the cultures of human bacilli which Smith studied were all made from cases of human infection, and that the bacilli were adapted to the human system for generations. If a study of human bacilli from a case of supposed bovine infection could be studied side

by side with bovine bacilli, the differences which Smith found might not be present. This seems to be a fertile field for investigation. Koch[74] expresses (July 23, 1901) vaguely the possibility of differentiating between intestinal tuberculosis in man of animal and of human origin by inoculation of cattle. If of animal origin, the cattle, he leads us to infer, will be infected, and if of human origin the cattle will not be infected. He does not, however, offer the proof necessary to remove this from the realm of pure speculation.

On the other hand, it is not unlikely that the bovine tubercle bacillus, by passing through the bodies of several persons, or even one, may be so modified as to present under study the characters which we ascribe to the human bacillus. Weight is added to this view by the experiments of Nocard[75] in which he succeeded by means of cultures *in vivo* transforming the human bacillus into one of the avian type. Also by the experiments of Dubard and Kral[76] in which it was shown that the tubercle bacillus derived from fish was at first pathogenic for cold-blooded animals only and grew only at a low temperature, but that by passage through a series of guinea-pigs and rabbits it became virulent for these animals, and that by frequent transplantation it was induced to grow at incubator temperature and produce a culture just like the human tubercle bacillus, from which it was supposed to have been at first derived.

Neither the work of Smith, Pearson, nor Dinwiddie adds or pretends to add anything positive to our knowledge of the transmissibility of tuberculosis from animal to man through the meat and milk. All evidence we have from this work is that afforded by an interpretation of the results and the use of them as a basis for reasoning about what the result would be if the terms of the experiment should be reversed and human beings were inoculated with bovine bacilli. By such an examination of these results we find that they are rightfully interpreted as antagonistic to the idea that tuberculosis is not communicated from animal to man through the meat and milk. Smith's experiments have, evidently, because of careless reading, been used by some writers

as proof of a nontransmissibility from the animal to the human being. On the contrary, Smith's experiments do not indicate this, nor does Smith claim that they do. This author says, after announcing his experiments, without any reference to these experiments, "It seems to me that, accepting the clinical evidence on hand, bovine tuberculosis may be transmitted to children when the body is overpowered by large numbers of bacilli, as in udder tuberculosis, or where certain unknown favorable conditions exist." Smith concludes his article by saying,[77] "if in this brief summary I have presented nothing but problems to be solved and doubts to be entertained, I feel quite, etc.," thus indicating that he has proved nothing, but that he has only pointed the way toward the proper field of investigation, something he has certainly done. Dinwiddie does not touch upon these points.

The work of Smith and Dinwiddie, already referred to, which points to the conclusion that the bovine tubercle bacilli are more virulent[78] for a number of species than the human tubercle bacilli and equally virulent[79] for others, certainly warrants us, if we draw any conclusion at all with reference to man, that the bovine tubercle bacilli are more virulent for man also. The extreme susceptibility of man to tuberculosis, indicated by the large percentage of the human race suffering from the disease, would further point to the soundness of such a conclusion. Manifestly the opposite conclusion would be eminently unfair. It has been intimated by Conn[80] that "if the human bacillus is only slightly pathogenic for cattle it is at least likely that the bovine variety may not be very dangerous to man." It would be as reasonable to say that, inasmuch as the American soldiers who at one time during the Philippine War were armed with Springfield rifles which were of short range were not dangerous to the Filipinos, neither were the Filipinos at that time armed with long range Mauser rifles, dangerous for the American soldiers.

I consider that there is another point worthy of notice. It is this: In the comparisons of the virulence of bovine and hu-

man tubercle bacilli which have been made by Smith and Dinwiddie they have compared the bacilli of human *sputum* with the bacilli of bovine *tissues.*

I believe that we cannot make a fair comparison between tubercle bacilli from the human and the bovine source unless all the conditions on both sides are as nearly similar as possible. We cannot make a fair comparison between tubercle bacilli derived from human *sputum* and those derived from bovine *tissues.* Smith has found by comparative study of the bacilli from these two sources in cultures that those from human sputum are more saprophytic in growth than those from bovine tissues. It may be that the more saprophytic the bacillus is the less virulent it is, and that this will account for the fact that the bacillus from human sputum shows itself to be less virulent than that from bovine tissues. It appears that in order to carry on absolutely fair comparative researches it would be necessary to watch the cases on both sides for a considerable time to make out whether they are acute or chronic and then take the germs from tissues in the same part of the body of each, and from tissues which have undergone similar degeneration on account of the disease. Reliable work can be done only with cultures and not with tissues. The reasons for this are easily apparent. Until this is done it seems to me that but little can be done on this part of the subject which will warrant us in drawing conclusions. If experiments be made in the manner suggested it may be that the difference in virulence between human and bovine bacilli would not appear, and that they may be found to be of equal or nearly equal virulence.

Inasmuch as Koch's address before the British Congress on Tuberculosis[81] on July 23, 1901, has received so much attention and has been the occasion for so many unwarranted dicta, especially upon the part of those who oppose the doctrine of transmission of tuberculosis from animal to man, it is incumbent upon me to give it special notice here. First, I would notice a certain statement of his which has been the subject of most misinterpretation. Koch has made within the last two years

numerous inoculations and feedings of cattle with human tubercle bacilli from sputum in which he has failed to infect them. At the same time cattle inoculated or fed in the same manner with bovine tubercle bacilli from the lungs became badly infected. He concludes : " Considering all these facts, I feel justified in maintaining that human tuberculosis differs from bovine and cannot be transmitted to cattle. It seems to me very desirable, however, that these experiments should be repeated elsewhere, in order that all doubt as to the correctness of my assertion may be removed." Koch has nowhere stated that because human tuberculosis cannot be transmitted to cattle neither can cattle tuberculosis be transmitted to man. Some critics of Koch's paper have made it appear that Koch has given expression to such a line of reasoning, but a careful reading of the paper will show that he has not done so. He does not use this argument at all when he comes to answer the question, " Is man susceptible to bovine tuberculosis? " So far as the answer to this question is concerned he wisely leaves his cattle experiments out of the consideration. Second, he makes the following answer to the question " Is man susceptible to bovine tuberculosis? " "Though the important question whether man is susceptible to bovine tuberculosis at all is not yet absolutely decided, and will not admit of absolute decision to-day or to-morrow, one is nevertheless at liberty to say that, if such a susceptibility really exists, the infection of human beings is but a very rare occurrence. I should estimate the extent of the infection by the milk and flesh of tuberculous cattle and the butter made from their milk, as hardly greater than that of hereditary transmission, and I therefore do not deem it advisable to take any measures against it." Let us see what brings him to this conclusion. It is the result of his own observation and the observation of several other physicians, to wit, that *primary* tuberculosis of the human intestine is a very rare disease. His reasoning may be stated in this way: If tuberculosis were set up in the human being by ingesting meat and milk of tuberculous cattle the primary lesion would be in

the intestine; primary tuberculosis of the human intestine is very rare; therefore, infection of the human being with tuberculosis by ingestion of meat and milk of tuberculous cattle is very rare.

The soundness of his reasoning should be examined into. In the first place, as already pointed out at another place in this article, there is room for difference of opinion in regard to the prevalence of primary tuberculosis of the human intestine, and the burden of proof is certainly on the side of those who claim that primary intestinal tuberculosis is rare. I may ask on which side tuberculosis of the peritoneum, liver, spleen, and mesenteric lymphatic glands should be counted. It would appear most reasonable to suppose that in these manifestations of tuberculosis the offending bacilli entered by way of the digestive tube.

Also Koch's own experiments, detailed in his paper before the British Congress on Tuberculosis, in which he produced "tuberculosis of the lymphatic glands of the neck, and in one case a few gray nodules in the lung" of pigs by feeding human sputum, and "tuberculous infiltration of the greatly enlarged lymphatic glands of the neck and of the mesenteric glands, and also extensive tuberculosis of the lungs and the spleen" in pigs by feeding bovine bacilli, certainly contradict his hypothesis, namely, "that a case of tuberculosis has been caused by alimenta can be assumed with certainty only when the intestine suffers first—that is, when a so-called primary tuberculosis of the intestine is found." Pearson[82] refers to experiments of his in which "it has been shown in the most unmistakable way by many feeding experiments . . . . that, contrary to the early belief, animals fed tubercular materials may develop primary pulmonary tuberculosis, and, in some instances, fail to show lesions in any other organ."

Upon this foundation Koch's conclusion rests. I can only add that the facts do not warrant so sweeping a conclusion.

After all, we must face the homely facts that we have in cattle and in man a very prevalent disease which we properly call by the

same name, tuberculosis, in both species and which presents very much the same pathological picture in both; also that we find in sections from the tissues of tuberculous subjects of both these species myriads of germs which have practically the same morphology and the same staining reactions; also that these germs from these two sources are found to have in a general way the same cultural qualities. These familiar characteristics, although they do not answer to the critical demands of precise science, should certainly lead us to ask for the most convincing proof that tuberculosis of man and tuberculosis of animals are two different diseases before we adopt the belief that they are.

It may be stated *en passant* that students of this subject of transmissibility of tuberculosis by meat and milk, whether they be individuals or commissions appointed to study the matter, are almost unanimous in their opinion that there is danger of such transmission, and that this danger is great enough to call forth protective legislation and regulation against these sources of danger. Attention may be called to the fact that the British Congress on Tuberculosis before which Koch read the paper to which reference is made above passed a resolution after his paper was read and debated, recommending that the present restrictive regulations thrown around the sale and use of products of tuberculous cattle should be continued without any relaxation.

What evidence has brought them to such conclusion? Practically that which has been presented in this paper.

SUMMARY.

The evidence presented here is:

1. That tuberculosis may be transmitted to animals through their eating the meat of certain other animals which are tuberculous or by their being inoculated with it.

2. That tuberculosis may be transmitted to animals through their ingestion of the milk of certain cows which are tuberculous, or by their being inoculated with it, both when the udder of the cow is diseased and when it is healthy.

3. That, therefore, the meat and milk of certain tuberculous animals contain living, virulent tubercle bacilli.

4. That the tubercle bacilli of cattle are pathogenic for man.

5. That, therefore, the meat and milk of certain tuberculous animals is capable of producing tuberculosis in human beings who use these products as food.

PRACTICAL CONCLUSIONS.

1. In Regard to Meat.

The meat of all food animals, especially cattle, is unfit for food when the animal is highly tuberculous; but is safe for food when the animal is only slightly or moderately tuberculous, especially so if the meat is well cooked, provided the tubercular tissues are eliminated.

2. In Regard to Milk.

a. The milk of a cow with tuberculous udder is always dangerous for food unless it is well sterilized.

b. The milk of tuberculous cows with healthy udders is sometimes dangerous for food unless well sterilized. We cannot tell except by experiment, which is impracticable as a routine matter, when such milk is dangerous and when it is not. Hence the milk of tuberculous cows without disease of the udder should always be looked upon with suspicion, and either not be used or be used only after sterilization.

c. Tuberculous cows may be kept for breeding purposes provided they are isolated, even from their own offspring, and their products sterilized before use; or,

d. They may be slaughtered for food under conditions imposed by the conclusion stated above in regard to meat.

GENERAL CONCLUSION.

All legislation and regulation should favor the disposition of tuberculous animals as suggested above, so far as meat and milk are concerned.

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A FURIOUS OUTBREAK OF ANTHRAX is reported from the British Northwest, 2500 sheep having died out of a total of 16,000 on one range alone. The Dominion, Provincial and local authorities promptly took the most effective measures possible and vaccination of horses, cattle and sheep was inaugurated on a colossal scale, owners clubbing together and furnishing an abundance of funds. The final reports of the veterinarians should be most interesting.—(*Breeder's Gazette, Nov. 9.*)

THE VETERINARY PROFESSION AND ITS FUTURE.

INTRODUCTORY LECTURE TO THE NINETEENTH ANNUAL SESSION OF THE CHICAGO VETERINARY COLLEGE, OCTOBER 2, 1901.

By E. L. Quitman, M.D.C., of the Faculty.

Gentlemen:

It is with much pleasure that I welcome you to the Chicago Veterinary College at its nineteeth opening exercises. I am pleased to see that so many of you have the courage and enterprise to attempt to enter one of the highest and noblest professions—a profession which has been dragged from the depths of quackery and ignorance and placed on a level with that of our sister profession, human medicine. Our domesticated animals are subject to nearly, if not all, the diseases of the human being, and require the same skill in diagnosis and treatment as does man himself.

The term *veterinary* is derived from the Latin, *Veterina*, beasts of burden. This term is now used in such a broad sense that veterinary medicine and surgery embrace the medical and surgical management of all the domestic animals.

Veterinary science comprises a knowledge of the conformation and structure of all the domesticated animals, their physiology and racial and individual characteristics, their humane management in health and disease, their utilization, their protection from, and medical and surgical treatment in, the diseases and injuries to which they are exposed; their amelioration and improvement, their relations to the human family with regard to communicable diseases, and the supply of food and their products for human consumption.

There is evidence that the Egyptians practiced veterinary medicine and surgery in very remote times, but only from the Grecians do we obtain any very definite information as to the state of veterinary and human medicine in ancient times. The writings of Hippocrates, the father of medicine (450 to 356 B. C.), afford evidences of excellent investigations in comparative path-

ology. Aristotle wrote on physiology and comparative anatomy, and on the maladies of animals, while many other Greek writers on veterinary medicine are cited by Varro, Columella, Galen.

Until after the conquest of Greece, the Romans do not appear to have known much of veterinary medicine. Varro (116 to 28 B. C.) may be considered the first Roman writer who deals with animal medicine in a scientific spirit. His "De Re Rustica," in three volumes, is largely derived from Greek writers. Celsus is supposed to have written on animal medicine. From the third century onwards, veterinary science had a literature of its own, and regular practitioners, especially in the service of the Roman army. Perhaps the most renowned veterinarian of the Roman Empire was Apsyrtus of Bithynia, who in 322 A. D. accompanied the expedition of Constantine against the Sarmatians, in his professional capacity, and seems to have enjoyed a high and well-deserved reputation.

Toward the close of the modern period veterinary medicine was much cultivated in the cavalry schools of Italy, and Spain also, in the fifteenth century, had an organized system of good practitioners, who have left many books still extant. Germany was far behind and produced no literature until the end of the fifteenth century. In the sixteenth century the influence of the Italian writers became manifest, and the works of Fugger and Fayser marked the commencement of a new era. In Great Britain veterinary medicine was perhaps in a more advanced state than in Germany, yet it was largely made up of the grossest superstitions. Among the Celts, as among the other civilized nations of Europe, the healer of horse diseases and the shoer were held in high esteem, and the court farrier enjoyed special privileges.

The earliest known work in English appeared anonymously toward the commencement of the sixteenth century, namely, "Propertees and medcynes for a horse and mascal of oxen, horses, sheepes, hogges, dogges."

English books of the seventeenth century show a strong

tendency toward improvement in veterinary medicine and surgery, especially as regards the horse. This improvement is more notable in the literature of the eighteenth century. Veterinary anatomy was greatly advanced by the "Anatomy of an Horse" (1683) of Snape, farrier to Charles II, illustrated with copper plates, and by the still more complete and original work of Stubbs, "The Anatomy of the Horse" (1766). This latter work marked a new era in veterinary anatomy.

The most important era in the history of modern veterinary science began with the establishment of veterinary schools. France took the initiative step. Bourgelat, through influence with Louis XV, induced the government to establish a veterinary school at Lyons in 1761. He directed it himself for a few years, when he realized that the great benefits from it justified an extension of its teachings to other parts of France. Therefore, at Alfort, near Paris, in 1766, he founded a second veterinary school, which soon became and remains to this day one of the finest and best veterinary schools in the world.

Soon after the Alfort school was established, the National School for Austria was founded at Vienna by order of Maria Theresa, and this school, remodeled and reorganized by Joseph II, is now the largest in the country. Prussia quickly followed suit, and government schools were founded in almost every European country excepting Great Britain. In 1790 St. Bel, after studying at the Lyons school and teaching both at Alfort and Lyons, went to England and established "The Veterinary College of London," which has been the parent of other veterinary schools in Great Britain. The first veterinary school in Scotland was founded by Professor Dick, a student of Coleman's, and a man of great perseverance and ability. In 1844 the Royal College of Veterinary Surgeons (not the Royal Veterinary College) obtained its charter of incorporation, its purpose being to examine students taught in the veterinary schools and to bestow diplomas of membership on those who successfully passed the required examinations.

The first college to be founded in the United States was the

Columbia Veterinary College (now defunct) in 1857 in New York City. We have now in North America a large number of colleges, quite a few of them, I am sorry to say, of the mushroom variety. Several of the universities have established departments of veterinary medicine.

The veterinary literature of this period affords striking evidence of the progress of the science: excellent text-books, manuals and treatises on every subject belonging to veterinary medicine are numerous, and there is an abundance of periodical literature. The practical and technical education of practitioners has, of course, been improviug to a corresponding extent.

Veterinary medicine has been far less exposed to the vagaries of theoretical doctrines and systems than human medicine. The explanation may perhaps be that the successful practise of this branch of medicine depends upon the careful observation of facts and the rational deductions therefrom to a greater extent than does human medicine. It is a medical eclecticism, based on practical experience and anatomico-pathological investigation, rarely, indeed, on philosophical or abstract theories. In this way veterinary science has become preëminently a science of observation. At times it has been slightly influenced by the doctrines which have influenced human medicine, such as those of Broussais, Rademacher, Hahnemann and others, but not for long. Experience of them when tested upon dumb, unimaginative animals soon exposed their fallacies and compelled their discontinuance.

Of more importance than the cure of disease is its prevention, and this is now considered the most important object in connection with veterinary science. More especially is this the case with those serious disorders which depend for their existence upon the presence of an infecting agent, and which are communicable to man.

Every advance made in human medicine affects the progress of veterinary medicine, and recent discoveries must in the end create as great a revolution in veterinary practice as in

human medicine. In preventive medicine the application of the germ theory is of much importance. The sanitary police measures, based on this knowledge, are easily framed, and if carried rigorously into operation, must eventually lead to the extinction of these disastrous disorders.

The medicine of the lower animals differs from that of man in no particular except, perhaps, in the application of utilitarian principles. The life of man is sacred, but where there are doubts as to the possible restoration to health and soundness of an animal, monetary considerations generally decide against the adoption of remedial measures.

This school was organized in 1883 by Professors A. H. Baker, R. J. Withers, and Joseph Hughes. The new veterinary school had neither pecuniary endowment nor public support. The three gentlemen had neither wealth in hand nor wealthy relatives, but, nevertheless, did have two necessary elements of success, namely, faith and an abundant capacity for work, and so successfully did they use these elements that at the end of two years they found the space in the rickety old livery stable, with the dissecting room across the alley in a little, old barn, inadequate for their purpose. Consequently, this building was planned and built, and even here by reason of the phenomenal growth in the attendance, important changes have been necessary from time to time for the accommodation, comfort and welfare of the students, and to-day the school is one of the best equipped on the continent. The course is as scientific as is consistent with thoroughly practical instruction. There are abundant facilities for the teaching of theory and practice of veterinary medicine, anatomy, chemistry, veterinary dentistry, both theoretical and practical, helminthology, general pathology, histology, the use of the microscope, materia medica, pharmacy, hygiene, breeding, and general management of domesticated animals receive careful and thorough attention. Special attention is also paid to veterinary surgery and obstetrics, lameness, shoeing and examination of horses for soundness.

The founders of the Chicago Veterinary College can look

with pride upon the successful career of their graduates, some of whom are employed as teachers of veterinary science, a large number holding important government positions, and nearly all enjoying lucrative practices. It is to the success of its graduates that the success of the college is due, and I am constrained to say to you that the reputation that it is to have in the future will depend on the fidelity with which each one of you shall perform the duties of the positions you will occupy.

You, young men, in choosing the profession of medicine, have entered upon a field of study of wider scope, of more intense interest, and capable of yielding fruits of greater benefit both to yourselves and to your race, let alone the poor suffering dumb brute, than any other known to us. Regarding the extent of the field of study you have entered upon, it may truthfully be said that it extends to and includes some part of every science known to man. For while man himself stands as the central figure in this vast field, his anatomy and physiology finds analogies and illustrations in every class, order or species of animal.

The present era in medicine, by which I mean the last half of the nineteenth century, is preëminently one of brilliant discoveries and inventions, of rapid and extreme fluctuations in opinions and practice. These characteristics are the natural results of the transition from centuries of purely theoretical groping in darkness, to the rapid unfolding of actual knowledge concerning the composition and properties of the material world we inhabit, in the progress of modern chemistry and physics, in actual knowledge of the structure and function of various parts of the body, and the influence of exterior agents upon them. The germ theory of disease is a modern innovation, and a most important one, especially in preventive medicine. The present status of medicine has an actual scientific basis for each of its branches, accompanied by all the instruments and methods necessary for further reliable investigations, and the great necessity now is, not new instruments, new remedies or new specialties, but the patient application of our ample methods of inves-

tigations to the detection and elimination of existing errors, and to the verification of all practical deductions by actual tests either in the laboratory or in the clinic room.

For example, it is not enough that you know a microbe or a ptomaine may produce a certain disease; you should be able to follow the germ from its point of entrance into the system to its exit or destruction. It is not sufficient that you know the symptoms of a disease; you should be able to see clearly the actual morbid process which takes place through all the different phases of that disease. Neither is it enough that you should know that one remedial agent may act as a cathartic, another as a diruetic, and another as an antipyretic, but you should know whether the first produces its effects by increasing secretion from the mucous membrane, or by inciting increased action of the nervous and muscular structures of the intestines; whether the second increases the flow of urine chiefly by increased activity of the renal cells, by greater dilution of the blood, or by nervous excitation; and whether the third reduces the temperature by retarding the process of heat production, or by increasing heat dissipation, or by depression of the heat centres of the brain. The great practical importance of an exact knowledge of etiology, pathology, and therapeutics is too obvious to every intelligent student to need further illustration. It should be the aim of every student and practitioner of the healing art to know the actual changes in the blood, the tissues, the secretions and excretions, and the function of each organ, from the beginning to the end of every morbid process. It should be equally his aim to know the exact composition, properties and actions of every remedial agent he uses, and its influence on any one or all of the structures and functions of the living body. The present facilities and appliances for exact research, if used intelligently and patiently, make the evolution of such completeness of knowledge possible in every department of medicine.

In proportion in which you see clearly the important lines of study I have indicated and steadfastly follow them, in the same proportion will all the departments of veterinary medicine

increase their claims to the position of true sciences, and its standard will be raised at least to that of the human medical profession. Yours is a noble calling with plenty of room at the top.

The outlook for the veterinary profession never was so bright as at the present time. The field for the veterinarian is constantly increasing. The rapidly growing population of the United States itself, calls for a corresponding increase in the raising of food animals. The same conditions call for an increased number of horses, which animal, I am glad to say, is here to stay; it is a case of the "survival of the fittest." Several times "horsedom" has had a scare; when railroads were first introduced, it was thought that the horse would be a thing of the past, but they only caused a general increase in trade and a greater demand for horses to cart produce of all kinds to the depots.

The general introduction of electric cars in the cities was first looked on as a setback for the horse, but this was found also to be an error. It only presaged an increasing population and a corresponding demand for the horse.

Then came the bicycle; this, for a time being, did greatly decrease the demand for light drivers and saddle horses; but it proved to be only a "nightmare" in the form of a fad, and after a few years, like all fads, played itself out.

Now, last of all, and still before us, is the automobile fad; for I am sure it is only a fad and will soon have its run and be over. This can be illustrated by a joke. A prominent automobilist upon being asked how much it cost to run his machine, replied, about a cent a mile to run it and $10 per mile for repairs. This reply is proven by inquiry among automobilists and by noting the immense bargains offered in the machines by people who have grown tired of them.

I am personally acquainted with a number of people who have given them up and gone back to the old standby, the horse.

Yes, he is here to stay.

Again a vast and growing field for the veterinarian of high quality, is in the government service as inspectors in abattoirs, stock yards, ports of entry, experiment stations, etc. Indeed, in this specialty, the demand exceeds the supply.

As an item of interest and proof of the immense amount of animals inspected for the year 1900, I might mention that the total number of cattle inspected ante-mortem was 53,087,994.

That the horse raising industry is greatly on the increase is evinced by the high prices at the present time, being as high or higher than at any time of the past; also our horse export trade is growing very rapidly, as shown by an increase for 1900 of forty per cent. over 1899, the United States having exported 56,315 horses during 1900.

This greatly increasing demand at home and abroad for live stock and dairy products, means an increased value of such animals, an increased number of such animals, and, what is more for us, a necessity for an increased number of veterinarians. You, gentlemen, are to be congratulated for entering the profession at so opportune a time for quickly gaining a lucrative practice or making your mark in the scientific world. But I here again wish to emphasize the fact that your success in either path depends entirely on how you spend your time while at college. The studious, thoughtful student will surely make a success, either as a practitioner or a scientist. The careless, lazy student will so surely be a failure. From now on let "work" be your watchword.

I once more, gentlemen, welcome you to this institution and on my own part, as well as on that of my colleagues, assure you that no pains of ours will be spared in promoting the great purpose for which you have come, and in rendering you whatever aid may be necessary to make you all that you could wish.

THE U. S. WAR DEPARTMENT has just announced that it has abandoned the automobile as unsuited for any service in the field, after two years' trial in the Philippines and at Fort Meyer, Va.

HUMAN TUBERCULOSIS IS TRANSMISSIBLE TO CATTLE.*

By Prof. M. H. J. P. Thomassen, of the Veterinary School at Utrecht.

Translated from "Recueil de Mèdecine Vètèrinaire," by L. Van Es, M. D., V. S., *Mobile, Ala.*

I had not the least idea that my announced communication "on the identity of human and bovine tuberculosis" could in reality create the great degree of interest which it owes to the sensational lecture made before the general meeting on Tuesday last by Prof. Koch.

The great teacher on tuberculosis denies the identity in question, and his assertion is based especially on results obtained by the inoculation of bovines with pure cultures or with the sputum of phthisical men.

In experiments made in common with Prof. Schütz, he has not been able to succeed in bringing about tuberculous lesions. At the most, there could be observed at the place of inoculation abscesses, the contents of which contained the bacilli of tuberculosis.

During the session Profs. Nocard, Bang and Woodhead have protested against the conclusions of Prof. Koch, to wit: that the milk and the meat of tubercular animals present little or no danger of infection to man.

Nocard has called attention at this very congress, that the results of experiments contradictory to those of Koch would be communicated, with the proofs on which they are based. Therefore I will endeavor to explain to you the experiments in question; but to begin with, I will stop to give you a short historical review on the question concerning the susceptibility of cattle to human tuberculosis.

Although Laennec had already identified tuberculosis of man with that of cattle, and even after the glorious discovery by Villemin, in 1865, it was for a long time rejected, to see in the

* Communication to the Congress at London, July 26, 1901.

lesions of tuberculosis of the ox the same characteristics as in those of man.

The anatomo-pathologists, with Virchow at their head, defended, during a number of years, the opinion that pearl-disease of cattle is a disease entirely distinct from human tuberculosis. It was not until 1882 that the discovery of the bacillus of Koch and its constant presence in the specific lesions of all the species triumphed over the last resistance on their part. In the meanwhile, during the period between 1865 and 1882, a number of learned men have busied themselves to prove the identity of the two tuberculoses, and have done so with success.

As proof, it was necessary to take the virus from one species and cause it to develop in the other. Of course, there could only be question of an infection from man to animal. In case one succeeded in one sense, the opposite should be regarded as very probable. It is Chauveau who, at the veterinary school of Lyons, made the first attempts in 1868. The infection of the bovine species by human tuberculous virus was brought about in three manners: by the introduction of tuberculous matter into the digestive organs, by intravenous injection, and by the injection into the subcutaneous connective tissue. Three subjects who swallowed infectious material derived from human lesions became all tuberculous. The lesions had the same character as those of animals which had ingested material obtained from bovine lesions.

In one single case the human virus was introduced intravenously; after 29 days the injection had already caused the formation of interesting lesions, all localized in the chest. The hypodermic injection of a tuberculous emulsion, derived from the human species, gave rise to a local tuberculosis, with at the most, lesions in the nearest lymphnode, without the least manifestation of a generalization of the infection.

The author comes to the conclusion, that human tuberculous virus behaves itself toward the bovine species as tuberculous virus derived from the same species. Klebs inoculated a calf of four weeks into the peritoneum with tuberculous material

from man. The animal, which was killed after three months, had on the omentum and part of the stomach a great quantity of small, pedunculated, non-calcified growths, which had the histologic characteristics of pearly tubercles. He found besides gray miliary tubercles in the lymphnodes of the mesentery and a few in the liver and in the spleen. Klebs does not make mention of changes at the place of injection.

Kitt obtained, by the inoculation of a calf with 20 grammes of juice obtained from scrofulous nodules of man, an acute tuberculosis and death in 46 days.

Bollinger seems to have ascertained a typical pearl-disease, after the inoculation of sputum of a consumptive into the peritoneum of a calf. The lungs and the other thoracic organs presented no lesion whatever.

Crookshank inoculated a calf into the peritoneum with sputum, diluted with a weak solution of chloride of sodium. After 42 days, the animal succumbed to a pyæmia. He observed, besides, abscesses, containing Koch's bacilli, also a miliary tuberculosis of the lungs and of the liver.

Those few experiences show evidence that human tuberculosis can be experimentally transmitted to the ox. This proves at the same time that the two tuberculoses are identical.

The results of experimental infection by means of pure cultures of the human bacillus were notably different, leading to the most harmful conclusions regarding their practical application.

The first experiments in this sense, dating 1898, have been made by Theobald Smith, of Washington. He called attention first to the morphologic difference between the human bacillus and that of cattle; further he pointed out a still greater difference in the report on their pathogenesis.

The bacillus of pearl-disease was more virulent for the greater part of the animals experimented upon; death came sooner, the lesions were more extensive, and they enclosed a more considerable number of bacilli.

Smith inoculated 11 bovine animals of which 5 with the

bovine bacillus and six with the human one. Of the first five, two succumbed to a miliary tuberculosis, and of the three others, which were slaughtered two months later, one had typical pearl-disease and the other two had lesions, which could be regarded as being of a tubercular nature. The animals had become very thin and shown fever during the first weeks after inoculation.

It was not the same with the cows inoculated with cultures from human sputum. Slaughtered two months after infection, all those animals only showed local and insignificant lesions.

Frothingham made similar experiments on four calves, with cultures coming from the liver of a one year old child.

1st calf. 3 months old. Intraperitoneal inoculation. When tested with tuberculine 5 weeks later, the animal showed a reaction of 1.9° C. It was killed 6 weeks after inoculation.

2d calf. 3 weeks old. Inoculated in the same manner. Tested 5 weeks later, it had a thermic reaction of 1.6° C.

3d calf. 3 weeks old. Inoculated through the trachea, showed on being tested 5 weeks later a reaction of 2.9° C. It was killed six weeks after the infection.

4th calf. 2 months old—was similarly injected into the trachea. 5 weeks later a reaction of 1.4° C. followed the test. Three of those calves had a local tuberculosis in the vicinity of the place of inoculation, that is to say, in those inoculated into the abdomen, on the omentum and peritoneum and the other (inter-tracheal injection) in the cervical lymph-ganglia on the corresponding side and in the muscles of the neck. In no case was the tuberculosis general. In three calves, infected with the sputum of a consumptive, Frothingham found, 5 months later, in two, local and insignificant lesions; the third showed no lesion at all.

The author finishes with the conclusion that, apparently, the calf is little susceptible to the human bacillus. Is this small susceptibility due to a less active virulence of the bacillus or to a greater resistance of the animal? This remains a fact to be elucidated by numerous experiments.

In 1899, Richard Gaiser made mention of an experiment.

He inoculated a calf into the eye and into the subcutaneous tissue with human bacilli, which had showed to be very virulent in the guinea-pig and in the rabbit.

On the first day the eye showed a severe irritation, which disappeared at that point until when, 15 days later, no inflammatory trouble remained. After 8 days, the cornea had become transparent and one could distinguish the iris, on which had formed a small yellowish deposit, which disappeared little by little. On the flank a small swelling had formed, which disappeared without leaving a trace. About 3 months after the inoculation the calf was slaughtered and at the autopsy no tubercular lesion could be found whatever. The inoculated rabbits and guinea-pigs succumbed to a generalized tuberculosis. Another calf infected in the same manner with the bovine bacillus, of which the virulence had been increased by passing it through a rabbit, was taken by a generalized tuberculosis.

Own experiments. The startling results published in 1898, by Theobald Smith, caused me to experiment on this line, in order to contribute, if possible, to the elucidation of a question which, at first, seemed to attract but very little the attention of bacteriologists, although it is from a hygienic point of view of the utmost practical importance, as we have just seen at this very congress.

In the month of March, 1899, two calves, one 8 weeks and the other 4 weeks old, served for a first experiment.

They were first subjected to the tuberculine test. After an injection of 10 centigrammes of tuberculine, no reaction occurred, so that the animals could be considered as being free from tuberculosis. The milk on which they were fed came from a tuberculine tested cow, which did not react.

I. The 8 weeks old calf received into the abdominal cavity a culture on glycerinized potato, obtained from the exudate of a child affected with a tuberculous meningitis, the culture being procured from the laboratory of Prof. Spronck, of Utrecht. Its virulence had been tested on the rabbit, and on the guinea-pig.

During the first weeks after the inoculation, the animal remained normal and showed no trouble.

On the 14th of May, it was subjected to the tuberculine test for a second time; after the average temperature during 3 days had been ascertained to be 38.6° C.

After an injection of 0.15 G. tuberculine, the following thermic reaction was revealed:

May 15.	8 A. M.	39.7
"	10 "	39.9
"	12 M.	40.2
"	2 P. M.	40.5
"	4 "	40.6
"	6 "	40.
May 16.	10 A. M.	38.8

The highest reaction, ascertained 17 hours after the injection of tuberculine, was 2° C. This reaction allowed one to suppose that the calf could be affected at least with a localized tuberculosis, so much the more, as during the last days the coat was less smooth and the appetite from time to time was not as desired.

On one of the first days of June, the calf was slaughtered, and in spite of the most searching post-mortem examination, not a trace of tuberculous lesion could be found.

II. The calf of 4 weeks old was inoculated during the first days of April, after having been subjected to the test already mentioned, into the anterior chamber of the eye, with a culture on glycerinized potato, obtained from a tubercular arthritis of man.

The virulence of the bacilli was tested on small animals, used for experiments. Beginning on the following morning symptoms of an intense keratitis showed themselves and the cornea became opaque to the extent that the process on the iris could not be followed further.

In the meantime the animal became affected with an enteritis (dysenteria alba), which required a thorough treatment.

During convalescence a certain degree of paresis developed,

so that the animal remained almost continually in a recumbent position. Notwithstanding this, the appetite remained such that the animal kept alive.'

On the 14th of May another tuberculine test was applied. The mean temperature on the three preceding days amounted to 39.° C. After the injection of 0.15 G. tuberculine, about 10 o'clock at night, the following figures were obtained the next day:

May 15.	8 A. M.	39.5
"	10 "	39.6
"	12 M.	39.1
"	2 P. M.	39.1
"	4 "	39.
"	6 "	38.9

This reaction of 0.6° C. seemed to exclude the existence of tuberculous lesions.

On May 27, about 6 weeks after the infection, the calf was slaughtered and found to be affected with a generalized tuberculosis. The eyeball was markedly atrophied ; after hardening, the sections revealed tuberculous lesions, especially in the iris and which contained quantities of the Koch bacilli. The pharyngeal, cervical, mediastinal and bronchial lymphnodes on the corresponding side were tumefied and hypertrophic ; they showed on section miliary tubercles. From the bronchial nodes the bacillus has been cultivated and sections from the different ganglia revealed tubercular lesions, containing bacilli.

The lungs were affected on both sides, especially at the apices.

On the surface we found a few yellowish gray elevations, which, after incision, proved to be deposits of the size of a small nut, and containing a cheesy material. In coverglass preparations from this material, bacilli were found, which, morphologically, were similar enough to the Koch bacillus, but which decolorized with the Ziehl–Gabbet method.

The lungs enclosed furthermore numerous miliary tubercles, and a few grayish, fibrous ones of a greater size, of which the

microscopic examination proved the tuberculous character by their structure, and by the presence of the specific bacillus. No tubercle showed signs of calcification. The results of the post-mortem examination shows that we have to deal with a fairly well generalized tuberculosis. The route followed by the bacilli from the eye to the lungs was evident.

III. In the month of December, 1899, a heifer of about 2 years old, and being in the best of condition, served for another experiment. In November, the animal, after an injection of 0.25 G. tuberculine, showed only a reaction of 0.5° C. On the 1st of December a rich culture on potato was injected into the trachea of the animal. It had been grown from a tuberculous kidney of a man. No trouble could be observed as a consequence, and on the 13th of February, 1900, an injection of 0.30 G. tuberculine, caused a thermic reaction not exceeding 1° C.

On February 16 an entire culture was injected into the thorax and another into the abdominal cavity. Of the latter, a small quantity was spilled into the muscles of the left flank.

On the next day, the temperature ran up to 40.3; the animal was dull and showed little appetite. After two days, its condition had again become normal. Bit by bit a hard tumor, of the size of a fist and easily movable, had formed in the flank at the point of inoculation. After three weeks this was opened, and after cutting through a fibrous envelope of the thickness of a finger, a yellowish purulent material escaped. It was rich in specific bacilli, which we were able to cultivate. Those cultures were characterized by a pale color. The wound, which was not treated with antiseptics, cicatrized little by little, so that soon there remained nothing but a slight fibrous thickening. In the month of July, 1900, the tuberculine test was repeated without producing a notable reaction. The heifer was slaughtered in April, 1901. The animal, splendidly fat, showed not the least tuberculous lesion.

IV. A fourth heifer, about 2 years old, was also inoculated, after a preceding tuberculine test, into the anterior chamber of the right eye with bacilli grown from the kidney of a man. On

the day following, the cornea was opaque, which, however, did not prevent the observation of the exudate in the anterior chamber for two days. The animal seemed to suffer to the extent that the appetite diminished. At all times the temperature remained normal. On December 19 the condition had become worse, the thermometer showed a temperature of 40.6° C., which at the night of the same day came down to 40.4° C. The fever lasted for three days. In the meantime the eye had assumed twice the normal size, so that the eyelids no longer covered the cornea, which dried up and looked somewhat like leather. On the 13th of February the tuberculine test was repeated with 0.30 G. Before the injection the mean temperature amounted to 39°. The following reaction could be observed on the next day:

February 14.	7 A. M.	39.5
"	8 "	40.3
"	9 "	40.1
"	11 "	40.0
"	12½ P. M.	39.7
"	2 "	40.0
"	3 "	39.7
"	6 "	39.7

There was thus to be noticed a thermic reaction of 1.3°C. Furthermore, the animal was dull, carried the head droopy, and had but little appetite. The tumefaction of the eye and the periorbital region had become more marked. The animal coughed a great deal. All those symptoms caused us to consider the heifer tuberculous.

About May 15 following she was slaughtered. In the eye tuberculous lesions had developed, but in only one bronchial ganglion I met with tubercles, which unfortunately were not subjected to a histologic or bacteriologic examination.

Conclusions.—The results of those experiments show that it is difficult, but not impossible, to cause in the bovine species a generalized tuberculosis by means of pure cultures of the bacillus found in the human species. The identity of the two tuber-

culoses still remains thus a solid truth, which shows that we will always have to reckon with the danger of infection from cow to man, and which in my opinion will be more easily brought about than the opposite. The greater virulence of the bovine bacillus, generally admitted, urges us, contrary to the advice of Koch, to a strict supervision in regard to milk and meat coming from tuberculous animals.

The success of an experimental infection depends for a great deal on the degree of resistance of the animal, as suggested by Nocard and as demonstrated in the second experiment.*

It is to be desired that as soon as possible numerous experiments be made of which the results will prove, and of this we have no doubt, that the theory founded on the Schütz-Koch experiments is an error resulting from a premature conclusion.

A GERMAN ANALOGUE OF TEXAS CATTLE FEVER.—The list of diseases imputed to parasites is now to be swollen, it seems, by a form of hæmoglobinæmia frequently observed in cattle in various marshy districts of Germany and often productive of death. As described by Jackschath (*Centralblatt für Bakteriologie und Parasitenkunde*, xxix, 14; *Wiener klinische Wochenschrift*, July 18th), the parasite is pear-shaped or roundish, and is observed in the red blood corpuscles. He maintains that it is conveyed by the ordinary cattle tick (*Ixodes reticulatus seu reduvius*), so that in this respect the malarial cattle disease of Germany resembles the cattle fever of Texas.

WHAT EVERY READER SHOULD DO.—"Permit me to congratulate you upon the completeness of the current volume of the REVIEW. I read every word of it carefully and find it instructive and interesting. I am especially interested in that division called 'Reports of Cases,' and shall endeavor to contribute something toward the same."—(*S. Stewart, Kansas City, Mo.*)

THE ROCKER OPERATING TABLE, used at the Kansas City Veterinary College, was an object of special interest in the clinic held in connection with the Missouri Valley Veterinary Association in October.

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* Case III.

"SURRA" IN THE PHILIPPINES.

By Coleman Nockolds, 1st Class Vet., 1st Cavalry, U. S. A., Batangas, P. I.

"Surra" is a disease apparently confined to tropical regions. As seen in the Philippines it has the characteristics of a pernicious anæmia; the animal becomes debilitated, and although the appetite continues as good or even more ravenous than when in health, there occurs a progressive emaciation, with marked loss of strength, accompanied with fever. That "surra" is caused by a hæmatozoa there is no room for doubt. The chief symptoms are loss of strength and flesh, fever of the intermittent type occurring during paroxysms. Temperature during 104 to 105, between paroxysms normal or below, which are marked by great pain. It is during the paroxysms that the blood should be examined and the worms will be seen. In the case of a mule that came under my observation the worms were very apparent, with a $\frac{1}{6}$ objective during the height of the fever, whilst in the blood of two horses suffering from the same disease no parasites were to be seen either during or between the paroxysms. The red blood cells are changed in shape and diminished in number. The pulse is hard and bounding, and respirations quickened. There is often a papular eruption upon the conjunctiva. The animal lies down most of the time and soon becomes a pitiable looking object, because of the appearance of bed sores upon various parts of the body. The position taken whilst standing is in my opinion rather characteristic of the disease—the head lowered, the back arched, fore limbs partially flexed, as are also the stifle joints and all the fetlocks, taking that attitude which is seen in "cocked ankle." There is incontinence of urine, and while in the standing position urine dribbles from the animal constantly. The animal is anxious; tears run down the face, and it neighs when the attendant approaches. Even during the height of the paroxysm and when in great pain the patient is always ready to eat or drink. Control of the limbs is apparently partially lost, as the animal usu-

ally falls heavily to the ground whilst endeavoring to lie down. As a result there is bruising and laceration of the knees, fetlocks, etc. The paroxysms in the case of a mule lasted from four to six hours; in the case of two horses twenty to twenty-four. When endeavoring to walk, which they do only on rare occasions, there is marked incoordination of movement. In some cases there is slight discharge from the nostrils and in all cases more or less œdema under the belly and of the legs, especially after a few days' sickness. Palpitation of the heart and paleness of the mucous membranes are constant symptoms.

The treatment in the case of two troop horses which were under my charge consisted of placing the animals in slings, good nourishing food, and the administration of quinia sulphate and iron twice each day, with an occasional laxative of oil and calomel. The animals recovered after an illness of ten and twelve weeks respectively.

A mule suffering from "surra" was given a purgative of aloes and calomel and put on an arsenical treatment, but continued to get worse, until finally it was unable to assume a standing position, and in falling down when trying to rise had exposed the bones of the knees, so was shot to relieve further suffering. To the last minute this animal had a ravenous appetite.

The chief signs after death were as follows: An abundant frothy discharge from the nostrils, under portion of chest and belly œdematous, conjunctiva ulcerated; tissues extremely pale and infiltrated with a yellowish fluid; muscular organs friable. Peritoneum and pleural cavities contained a considerable quantity of fluid and a number of worms, most probably the *filaria papillosa*. Stomach and intestines normal in appearance, but contained a quantity of dark brown foul smelling liquid. Liver reddish-yellow and very friable; kidneys palish and a small quantity of pus in the pelvis of the left one. Spleen slightly swollen, but of normal consistency. Bladder normal, containing urine, which was found to be loaded with albumen. Lungs slightly congested. Heart palish, but normal in consistency. Brain and cord apparently normal.

All cases of "surra" that I have seen occurred since the animals have been on half rations of native grass, which is of very coarse texture and obtained from swampy districts.

I have found the quinine and iron treatment, with an occasional laxative, to be superior to the arsenic treatment, and those animals that are not fed on native grass do not suffer from the disease.

A STUDY IN PSYCHOLOGY.—Prince, the "policeman dog," which by watchfulness and prompt action twice caused the arrest of burglars while they were looting his owner's apartments, is dead. Prince caught a cold about two weeks ago, which developed into pneumonia and heart disease, and he died in his mistress' home yesterday afternoon. Although of the usual tawny color, Prince was not an ordinary St. Bernard. His great face, marked in black and white, shone with intelligence, and his owner for the seven years of his life, Miss Jane Maguire, of No. 315 West Fourteenth Street, is almost broken hearted. Miss Maguire always fed the dog with her own hands, and he became very fastidious in his diet, always insisting on having chicken or broiled steak or chops for a meal. His favorite drink was coffee. Nothing was too good for Prince, especially after he had shown his ability as a policeman. He caused the arrest of a larcenous intruder in his owner's house in January, 1897. The thief was lifting a marble clock from the mantel in the parlor when the watchdog sprang upon him. The man dropped the clock with a crash and ran into the hall, and there he was held by the St. Bernard. In capturing his man Prince never bit him. With a spring he placed his great paws about the fellow and held on while Miss Maguire called for help. When a human policeman reached the house he handcuffed the intruder and led him away. Another time a ragpicker had filled his bag with valuable plunder in Miss Maguire's apartments when Prince sprang upon him, and the man's cries brought the household to the scene. The ragpicker was badly frightened, and stood motionless in the dog's embrace. Prince was able to discriminate with ease between various classes of persons, and generally showed his preference for those who were well dressed.—(*New York Herald, Nov. 10.*)

IF the present ratio of increase continues, the REVIEW'S circulation will double in the next two years.

RADICAL OPERATION FOR BURSAL ENLARGEMENTS.

By C. C. Lyford, B. S., M. D., D. V. S., Minneapolis, Minn.

Accident, with Nature as an assistant, is often a forerunner of both medical and surgical science and success.

Few veterinarians who have been in practice for a quarter of a century have not had opportunities of seeing lameness and bursal enlargements cured or improved as a result of direct injury. In the horse the fetlocks are especially subjected to wounds and bruises during runaways and kicking fracases, and in many cases of this kind I have noticed beneficial results.

Bursal enlargements have been long considered dangerous ground for surgical interference, especially so with young practitioners, who have an idea that the veterinarian is the whole thing, and Nature his enemy; but sooner or later he will learn that Nature is his best friend, and to consult her oftener, and his fellow-practitioner and books more seldom, would prove beneficial, not only to himself and his patient, but to the owner of the animal.

In considering the treatment of cases I shall take them up, not as any particular class, but as they appear in my practice during the past sixteen years.

No. 1, June, 1885. A brother of Billy Dayton, 2-27½, was sent me for treatment, he being a confirmed cripple from distension and enlargement of the bursæ of fetlocks on both front legs. I at once aspirated and injected tincture of iodine. This was followed with cooling lotions and bandages for two weeks. Then three successive blisters were applied at intervals of ten days. The swelling by this time had entirely disappeared, and the horse jogged apparently as well as ever; so was returned to his owner, Mr. Dayton, who lived in Wisconsin. For the next two months he was driven on the road preparatory to some fast work that he received in September and October. In November he was returned to me with bursæ as large and patient as lame as ever. I then decided upon opening parts above fetlock of both front legs, injecting U.S.P. tincture of iodine, fol-

lowing daily with corrosive solution, 1/500 parts, dressing wound with marine lint saturated with listerine, parts being kept cold with wet bandages. This was continued for four weeks, at which time the wounds were entirely closed. I then followed with blisters of cantharides and biniodide of mercury, repeating every two weeks for six weeks. At the end of two months the horse was apparently in good shape and was returned home the last of January, 1886. He was immediately given road work and used for speeding on the ice. I received report from the owner during the spring that he showed no signs of returning trouble, that he intended to put him on the track; but the owner died shortly after this and the horse was lost sight of.

No. 2, October, 1895. Was called to see gray gelding belonging to D. Clapsidle. Previous history indicating enlargement of fetlock, two years' standiug. Said horse had met with an injury ten days prior to my visit, caused by a cut under the fetlock, opening the bursal sheath. Having been dressed and bandaged, the cut had healed, though so distended and painful that he could not rest his weight on the foot. I at once opened above fetlock on both sides, passing the seton through and dressing the parts with antiseptics and keeping cool as in previous case. The horse was given a box stall and yard to run in. Parts were dressed twice daily. Wound had closed at the end of three weeks, when a blister was applied. Two weeks later he was put at work on a heavy meat wagon, from which time he had not lost a day's work until the fall of 1900, when he died from other causes. To all appearance this leg was as good as the other, and had never gone lame from the time of treatment.

No. 3, brown gelding, was presented for treatment July 14th, 1899, at the Minnesota State Veterinary Medical Association meeting, held at Faribault. Subject was as near as possible a duplicate of No. 2, excepting no wound, parts being painful from distension of the sheath and bursæ, resulting from a severe sprain. I advised operating, though the majority of the members thought differently. The owner coincided with me, and I assisted Dr. S. D. Brimhall in opening and putting seton

in place, and dressing parts. The horse was sent home with instructions to move seton and dress leg twice with antiseptics and cooling lotions each day. The only report from the case was given by Dr. Hay, of Faribault, six months later, who said the treatment was too successful to be profitable, as the owner never even consulted him regarding the case, but the horse was at work and as good as ever, and the leg as small as its fellow.

No. 4, June 26, 1900, bay mare Judith, belonging to the Minnesota State Experimental Station, having been sent to my infirmary to be delivered, but before removal got cast in the stall and produced a nice big fat capped hock, so I called Drs. Reynolds and Brimhall to assist in the operation, which consisted in casting, cleansing and cocaining the parts. An opening was made at the lower part of the swelling, from behind upwards, to within half an inch of the apex. The sack was then separated from its attachments and removed. Parts were cared for as in previous cases recorded, and were healing nicely until ten days later patient got cast in the stall the second time, causing the entire hock to swell to double its original size. Then I decided to place her in sling, where she was kept until August 4th, the parts being nicely healed, showing only a small scar about the size of a nickel.

No. 5, October 20, 1900, was called to see William K., 2-23¼, belonging to J. W. Hull, Minneapolis. History of long standing trouble, with more than a year of lameness at intervals. The part affected the left front leg at fetlock ; large bleb appearing on outer and upper side, about the size of a turkey's egg. I at once opened parts and injected sheath with iodine. By opening the sack, I found it consisted of a number of coats, indicating the result of several attacks of inflammation. I removed as much of the external wall of sack as possible, and at the point of the external excision a depression is now to be seen.

William K. has been in use since March 1st, and is now free from lameness, with leg firm, and does not swell from using. His treatment was as near as possible a repetition of previous cases.

Thoroughpins may be simple or complicated; in the latter case they extend down the sheath on the inner side of the hock, following the tendon or perforans, or may be connected with bursa of tibio-tarsal articulation—in which case I would not recommend a radical operation, though have often seen punctured wounds entering the true joint, that were healed without causing stiffness.

I was consulted during the spring of 1891 by the Fire Department of Anoka, Minn., regarding one of their horses, which was afterwards sent for treatment to the Experimental Station, St. Anthony Park, a photograph of which Dr. Reynolds has kindly presented for your consideration. See No. 6, which does not differ materially from No. 7 and No. 8, excepting the size being much larger, and confined to the upper part of the hock.

No. 7 appeared July 12th, 1901, at our State veterinary meeting, Northfield, Minn., the subject being a black gelding, weighing about 1100 lbs., though greatly emaciated from overwork and lameness of both hind legs, more especially the right, at stifle, which with the enlargement of his left hock, made it difficult for him to stand. The stifle was cocained and fired, pyro-punctured, work being done by Dr. J. P. Foster, of Selby, S. Dak. The hock was then cleansed, shaven and cocained, and opened at two different places on the inner and one on the outer part of hock, the swelling being more extensive on the inner and upper portion, following the sheath of the perforans tendon downwards and backwards to nearly two inches below the castor. The enlargement on the inner surface of the hock being something over 9 inches in length, with a septum between upper and lower portions of sack, which prevented direct communication between the two parts. Having thoroughly opened and explored the different cavities, a ten per cent. solution of tincture of iodine was used to swab the parts out. After dressing the parts with antiseptic solution of corrosive sublimate, 1 to 1000, covering the parts with compresses, the leg was done up as in previous cases. The case showed no indication of hæmorrhage two hours later, when the meeting

adjourned, the patient being left at the infirmary of Dr. K. J. McKenzie, whose later reports on the case are very interesting:

"July 18, 1901.—The patient with bursal enlargements is pretty weak at present. I was away all day the day following the meeting. On my return found my man trying in every way to stop hæmorrhage from the leg that you operated on. He bled considerably. That was last Friday night, and last night (the 17th) I came in from the country and found the stall flooded with blood from the other leg, where he had been fired. I hustled a hypodermic and salt solution, and he braced up considerable. The wounds are in excellent condition and there has been very little swelling. I think he would have gotten along finely had he not had to lose so much blood."

"July 31, 1901.—Our patient with bursal enlargement is doing better, and I have hopes of his recovery. I used the saline solution subcutaneously after the hæmorrhage, and got some beautiful sloughing about the neck."

"August 21, 1901.—Yours asking about the patient with bursal enlargement came to hand, and will say he is going to make a live of it, all right. The parts in which the sloughing took place are granulating nicely. I evidently used the solution too strong, without proper antiseptic precaution, merely ordinary cleanliness. I have been using a bichloride, 1 to 1000, and it is doing nicely. I feel that the sodium chloride saved his life, though it did raise Cain with his common integument. They say he is not as lame on either leg as he was."

No. 8 is so nearly a duplicate of No. 6, that it needs very little consideration, besides being only about one-half the size of No. 6. The history points to about one year's standing. I was called to operate August 16th, 1901, at which time I was assisted by Dr. Reynolds both in operating on and photographing the leg. The subject was placed in slings on account of lameness induced by bursatti sore, at the inner portion of the coronary band of same foot. After thoroughly opening the parts, and injecting tincture of iodine, the seton was passed through the leg, and leg dressed as in previous cases.

Since the operation, I have examined the case about twice, August 20th and August 27th. On the first date the leg was badly swollen and discharging profusely. The latter swelling had disappeared so that the parts were smaller than at the time of operation, and the discharge was but slight, though the sore on foot was still troublesome, having spread one-third way around the foot.

As to advice regarding operations of this kind, one should not be afraid of cutting freely, and giving parts thorough drainage, and see that the wounds are kept sufficiently open, and for such a time as to insure complete healing of internal parts, and destruction of the bursæ, which should heal by granulation before wound is closed.

The blood vessels being larger and more numerous on the inside of legs at both hock and fetlock, cutting may be done freely on the outside, being more guarded while operating on the inner side; but by no means consider either sufficient alone, as I have invariably seen it fail, where the opening was on one side and the injections could not be forced through, hence, I consider a seton almost indispensable both for drainage and keeping the parts open.

CONCENTRATED MEDICINES, in the form of tablets and granules, for canine patients, which have been in extensive use in this country for several years, have just reached England, and the November *Journal* acknowledges the receipt of "a small case, easily carried in one's pocket, containing six small bottles, and each containing a number of 'little pills for dogs.'" After remarking that the drug house which sent them furnished the formula of each, it says: "We like the pills, and approve of the principle." Now that this American fashion has received the endorsement of the worthy editor of the *Journal*, those who have been dispensing these "little pills" for a number of years may breathe more easily.

THE deaths from tetanus in St. Louis, Mo., resulting from the inoculation of diphtheric antitoxine reached fourteen, and the special committee appointed to investigate the cause have rendered a report stating that the serum drawn from the horse on September 30th was not properly tested, and that it was obtained during the period of incubation of the disease in the horse.

TAENIA EXPANSA IN THE SHEEP.

By Dr. H. F. Eckert, Markesan, Wis.

Read before the Wisconsin Association of Veterinary Graduates.

The subject I wish to dwell upon this evening is the disease known as *tænia expansa* in the sheep. No doubt this disease has caused more trouble to sheep-owners than any other disease known. It is extensively distributed all over the United States and Europe; in fact, wherever sheep are to be found, and is a source of great concern to the sheep-owners on account of its frequent fatalities, which are caused by the irritation of the mucous membrane of the alimentary canal owing to the presence of the tape-worm.

On July 5th, 1900, an outbreak occurred at Markesan. I was called to the farm of August Klavon, in the town of Mackford, to see a flock of sheep where the lambs were dying at an alarming rate. The owner stated that he had lost 25 lambs within the last two weeks. Upon my arrival I found that the lambs were a hard looking lot, they looked stunted or like a lot of lambs that had a very poor pasture. They were 42 in number, three or four of them were dragging in behind the flock. The old sheep all looked well and thrifty. By carefully questioning the owner it was learned that nothing but sheep had been kept on one and the same pasture for 15 years on account of the water supply in the pasture. The pasture contained a small creek which would only run during the wet season of the year; this stream also had two or three stagnant pools where the sheep got their water supply during the dry season. This water, I believe, was the seat of infection. I also learned from the owner that he had lost several lambs the previous spring. After consulting the owner it was decided to dispose of one of the lambs and hold a post-mortem examination on the same. On opening the lamb I found that the small intestines were completely filled with the tape-worm, *tænia expansa*. On places they were as many as six deep and from one to fifteen feet in length, so it made it almost impossible for any food to pass. The mu-

cous membrane was in an irritable condition. The owuer also stated the lambs would be unwell for two or three days, then becoming affected with convulsions would turn about in a circle and drop dead.

The appearance of the worm is a dull white, the length variable, the largest measuring from five to six yards in length and from one-twenty-fifth of an inch in breadth at the head, to one-half an inch at the tail—that is, in old sheep. The head is generally small; the neck is very short, the first segments are very short, the others as they proceed backwards to the tail become longer and broader. The head is small at the end, and is furnished with four suckers; the body of the worm is made up of segments very wide and flat, which vary in length in the different portions of the body. Each segment is furnished with an independent set of genital organs, and contains eggs or young embryos, so it will be observed that each segment is capable of reproducing its kind without the assistance of any outside agencies. The segments become matured as the embryos develop within them and are separated from the others to be ejected with their excreta on the ground, there to fulfill their life circle. The segments nearest the tail are the first to be shed, the remainder following in their turn.

Symptoms.—A paleness of the skin will be noticeable; the visible mucous membrane, such as the lining of the eyelids, will also have a bloodless appearance; the fleece is dry and brittle; the animal becomes poor in flesh; the lambs look unthrifty and do not develop; the appetite at first remains good, being increased if anything; the desire for liquids is also increased, the animal at times drinking greedily. The digestive functions soon become deranged, rumination is imperfectly performed, the breath becomes fœtid, signs of colic will be observed at irregular intervals, the evacuations are varied in character; at times the animal is constipated, again it suffers from excessive diarrhœa, the belly becomes distended owing to the accumulation of fæcal matter or gas, the evacuations have a mucous character and are yellowish in color, an examination frequently revealing segments of the

tænia expansa. In severe cases the sheep becomes so weak that it is with difficulty that it keeps up with the flock when grazing. They are attacked with convulsions, finally a malignant diarrhœa which refuses to yield to treatment, the animal gets down, unable to rise, and succumbing by exhaustion.

Treatment.—This is also both curative and preventive. Where *tænia expansa* is in a flock all the animals should be dosed, as the well ones if allowed to graze in the same pastures as those already affected are sure to pick up the eggs of the parasite and in turn become mediums for its distribution. Before administering vermifuges to the sheep they should be prepared for the same by being kept without food and water for at least twelve hours; they should be all dosed at one time and be kept confined for at least twenty-four hours after receiving the medicine, so that the segments and eggs which will be expelled are not distributed over the pasture. When we are satisfied that the medicine has had the desired results the sheep should be allowed to go to a new pasture and the yard in which they were confined should be thoroughly disinfected to destroy all evidence of the disease. One of the best and simplest tæniacides to use is kamala; this is obtained in the form of a coarse red powder, its effect on the sheep for expulsion of the tape-worm being very satisfactory, and the nearest to a specific of any medicine I have ever used. Take kamala 3 drams, mix thoroughly in 3 ounces of linseed gruel; this is the dose for adult sheep. Lambs take from one to two drams according to their age and size. This should be given very slowly to the animal to insure its passing into the fourth stomach and so on into the intestines, as if it should be hastily given it is liable to enter the rumen, where its effect would be lost; this treatment should be repeated in a week. Out of 92 lambs and sheep treated by me under this treatment, I did not lose a single case.

Preventive Treatment consists in not overstocking the pasture. Attention must be paid to the water supply, as this appears frequently to be a source of infection.

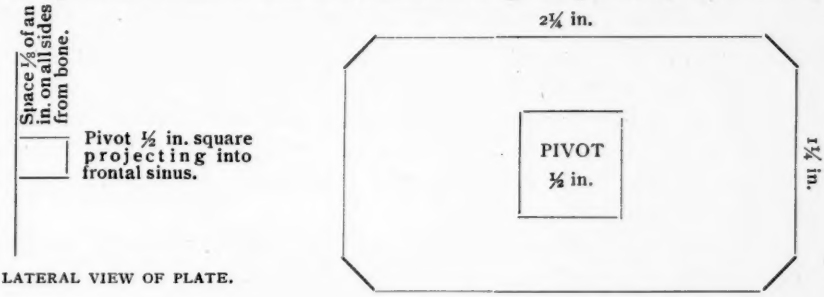
REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

UNIQUE SURGERY.*

By A. M. LEEK, Student, N. Y.-A. V. C., New York City.

This case is of recent occurrence. Having heard of the result achieved I sought out further particulars, recognizing the importance of bringing it before your notice, it being the *first* performance of this operation to be recorded amongst the annals of veterinary surgical achievements—and the one who performed this operation is a member of the faculty of our college (I refer to Professor J. Elmer Ryder, to whom all praise is due). The animal upon which this operation (unique in its character and grand in its results) was accomplished is a valuable mare of the "hunter" type, named "Freckles." She was shipped by rail from Virginia to New York the latter part of April of this year. On the journey in the car to this city she sustained a compound comminuted fracture of the frontal sinus, about 2½ in. in diameter, caused by throwing up her head in car, strking a bolt. The wound was dressed antiseptically and loose pieces of bone removed amounting in quantity to a hand-



LATERAL VIEW OF PLATE.

FRONT VIEW OF PLATE.

ful. Cicatrization then proceeded rapidly until about June 1st, when there remained a round opening in the sinus ⅝ of an inch in diameter, the surrounding skin turning in and refusing to cover. The edges were cut back and kept healthy, but as no progress was made, and after all known treatment had failed, it was decided to introduce a silver plate and cover the opening in the sinus, as respiration was carried on through this artificial open-

* Read before the Veterinary Medical Association of the N. Y.-A. V. C., Nov. 12, 1901.

ing with inspiration and expiration. Accordingly an impression of the skull was made with dental wax on Aug. 2d and a plate of pure silver ordered made. Plate thickness of ordinary writing paper. Object of pivot on back of plate, prevented it from slipping out of place, as it would naturally do. For obvious reasons nothing but pure silver could be used. Pure silver is 1000 fine, solid silver is 996 fine. Cost, $6.50.

Upon completion of the plate and insertion of the same on Aug. 8th it was found necessary (the animal acting mean) to throw her. A longitudinal incision 3½ in. lg. and a transverse one of 2½ in. was then made and the plate (having been rendered aseptic by boiling in carbolic solution [1 to 30]) inserted and wound closed with silver wire. The entire operation was performed under a carbolic spray. For the first week after plate was introduced there was a slight purulent discharge from the near nostril with no odor; this subsided after one week. No discharge since. There is no bulging at location of plate; no thickening of skin nor tissues nor soreness on pressure, neither has there been any elevation of temperature at any time.

At present all that remains is a round cicatrix about ½ in. in diameter.

Prof. Ryder discharged the case Sept. 3d. Since then the mare has been regularly schooled over fences and is entered at the coming show at the Garden in the green hunter class.

As to whether silver plates could be used over any other opening than the one herein described (which is probably the most favorable place) seems possible to me.

In conclusion the deductions to be made from the above described feat of our professor are that often opportunities will present themselves requiring the exercise of mechanical ingenuity.

As the veterinary physicians of the future, will we be able to meet them?

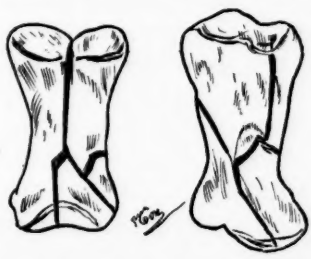
COMMINUTED FRACTURE OF THE OS SUFFRAGINUS IN A RACE HORSE.

By Wm. C. Miller, D. V. S, House Surgeon American Veterinary Hospital, New York City.

On Friday, October 11th, a stable boy was exercising a bay stallion, three years of age, on one of the race-tracks near New York City, and was warming him up on the back stretch, when he heard something "pop" like a pistol shot; thinking something had happened to his horse, he dismounted and examined

him, but could find nothing wrong, and remounted, but had ridden only a few yards when the horse showed marked lameness on the near hind leg, so much so that it took all the help available to bring him back from the track to the stable, when a veterinarian near by was called, who seemed to think it a sprain of the suspensory ligament and flexor tendons, and advised cold applications. During the afternoon and night horse was very uneasy, lying down and in continual pain. When standing would keep lifting the near hind leg up and down. Cold applications were continued with no results, and another veterinarian was called to see the case, who, being undecided about the certainty of his diagnosis, advised that Dr. Coates, of this hospital, be called, and he went to see the horse on October the 17th, and diagnosed the case a fracture of the os suffraginus, and advised that the horse be sent to the hospital, where a splint could be applied and the animal be placed in slings. The horse was brought here in a van on October 18, very lame, hardly touching the ground with the near hind foot; the inner side of the coronet was noticeably thickened, hot and very painful. Upon manipulation crepitus over the region of the os suffraginus could easily be felt.

The leg was bandaged from the foot to above the fetlock, a thick leather splint moulded over it, firmly bandaged, and the horse put in slings, which seemed to worry him a great deal and caused him so much uneasiness, that it was thought advisable to take him out of them and put him in a box-stall, where he would lie down most of the time, standing only a short while during the day, and then as if in great pain. On the 21st the bandage, which had become somewhat loosened, was renewed; the animal seemed to be resting somewhat easier, until the 26th, when the bandage, which had become displaced from the continual uneasiness of the horse, was replaced by a new felt splint moulded over the fetlock and coronet. In the meantime pain was continuous, animal very uneasy and appetite poor, so much so that on the 28th he refused to eat at all, and on Nov. 1st died.



Post-mortem.—Examination of the leg showed the os suffraginus fractured perpendicularly, the outer portion of which was again fractured into four pieces. Quite a thick bony deposit had been formed around the whole of the anterior and

lateral faces of the os suffraginus, and on the superior portion of the antorior face of the os corona. The accompanying rough sketch of the segments, held in position by wire, will give a correct idea of the front and rear views of the fractured bone.

FOUND—FATHER'S MITTENS.

By J. A. McCrank, D. V. S., Plattsburg, N. Y.

On the evening of June 10th of this year I was called to see a cow, just driven in from pasture. She was greatly distended and in distress, but otherwise had every sign of good health. I advised letting her rest in the paddock for the night and I would see her in the morning. I suspected she ate too much of the quickly growing grass. When I called in the morning she was all right; chewing her quid, and wanted to go out again. She was sent to pasture at noon and returned in good condition at night. The next evening she came in very greatly distended and distressed; the same treatment was resorted to and was followed with similar results. This condition of affairs continued until June 25, when she was found dead in the pasture. I was informed and made a post-mortem. Besides about a pound of nails, tacks and wire, I found a large pair of coarse woollen mittens, patched and darned to make them very large and heavy, having been in use for many years. The owner's son was present at the post-mortem. When he saw the mittens he called out, jubilantly, "Oh, there is father's mittens that he lost last winter; he blamed me for destroying them." The truth, indeed.

The animal was fat, healthy and in the pink of condition, and, if you will allow me to prophesy, she would have lived a good long life of health and usefulness had she not overburdened or overcrowded the rumen with the sweet young grass, which forced the mittens into the passage to the reticulum.

Her flow of milk was not in the least interfered with all this time.

TRACHEOTOMY IN A MARE.

By John Minchin, V. S., Goshen, N. Y.

On October 2d last I was called to go see a mare nine miles from my place, that her owner said could hardly breathe for a day or two, and that morning he thought she would choke. On inquiry was told the mare's head was very much swollen, and to hurry up and come. And so I did. I found the animal in a very dangerous state—head of an enormous

size, eyes almost closed, and breathing very loud; lips and submaxillaries all out of shape. After a careful examination and study, I told the owner I knew of only one chance for the animal and that chance would be at his risk, viz., to open the trachea and insert a tube for the purpose of breathing, etc. But as I said above, 'twould be at his own risk,—for this was the second case I had seen in twenty years,—when he said "go a head." To make assurance doubly sure, I had him call one of his neighbors to assist. Mr. Neighbor did not put much faith in my doing anything of the kind; but he did his duty as an assistant. On account of the great swelling of the parts I found it very troublesome to perform the operation and insert the tube, there being so much inflamed tissue. When I did get through in a very short time, the mare got some relief. She was much exhausted and very weak. I administered a tonic through the rectum, as it was impossible by any other channel, and gave orders to do the same every two or three hours at least, and to be sure to stay by her all night, with a pailful of hot gruel constantly before her. On my return the second day, to my great surprise, the animal seemed to be doing finely, having partaken of quite a quantity of nourishment, and did not need any more injections. Although I did not have very great hopes of her I can tell the readers of the REVIEW to-day, November 12th, that the animal is almost as well as ever. The wound is no larger than a quarter of a dollar and few observers would notice it.

[NOTE.—We fancy our correspondent has been in the presence of a case of purpura hæmorrhagica.—R. R. B.]

A SEVEN-LEGGED FŒTAL CALF.

By A. JASME, V.S., Savannah, Ga.

On November 9 was called to attend case of dystokia in a cow; labor commenced day before. Posterior presentation; could feel four legs. Could not make out exact condition, and proceeded to cut out what I could feel. A rope on one hind leg could not move the calf until three legs were cut off. Then applied rope over leg and hips, around lumbar region, and succeeded in removing a calf, and, to my surprise, four more legs. The anterior portion was intact, and showed three legs, two of which in normal position, the third between the two, the scapula resting from the base of the thorax against the ribs of the right side. Those three legs were same length and perfect. I had not so good a chance to examine the four hind legs, as

three had been amputated. However, they also seemed to be well formed and about the same length. Each foot had perfect toes, with the exception of one that had three. Do you know of many seven-legged calves? I am sorry I was not called the day before; the calf may have lived. The body was perfect everywhere else, and I think the calf was not long dead when I was called. Would say that the bones seemed soft and were not hard to break.

"WOLF IN THE TAIL."

By FRANCIS ABELE, JR., Quincy, Mass.

Was called to cow for "wolf in tail," a very bad case. Four wolves were present, the last being the highest up on the tail. The owner was desperate, because he could not check the hæmorrhage. The history did not suit my credulity. Like many other veterinarians, I believe what my own senses tells me, and simply give consideration to what others tell me. Owing to the excessive congestions, I really thought I had some sarcomatous or carcinomatous condition. Removed tail above last wolf. Had it examined microscopically. It proved to be simply inflamed tissues, probably due to medicaments.

DEPARTMENT OF SURGERY.

By L. A. AND E. MERILLAT,

Chicago Veterinary College, 2537-39 State Street, Chicago, Ill.

SURGERY OF THE EYE, EAR AND UPPER AIR PASSAGES.

(*Continued.*)

SCLEROTOMY.—Sclerotomy signifies puncture of the anterior chamber of the eye to relieve intraocular tension and remove foreign bodies.

Indications:

1. Chronic simple glaucoma.
2. Secondary glaucoma.
3. Hæmorrhagic glaucoma.
4. Staphyloma.
5. Parasites of the eye.
6. Internal opthalmia.
7. Recurrent opthalmia in solipeds.
8. Simple iritis.
9. Choroiditis.
10. Foreign bodies in the iris.
11. Exopthalmos.

12. Hydropthalmos.
13. Dislocation of the eye-ball.

Instruments.—Sharp-pointed bistoury, speculum, forceps, spatula and scissors.

Restraint.—The animal should be placed on an operating table or in the lateral recumbent position by means of the side-line and anæsthetized, and the eye fixed by a forcep held by an assistant; this is a very movable organ and any movement at the time of operation would be apt to defeat its object.

Technique.—Previous to operating, myosis is produced by the instillation of a solution of eserine into the eye; this contracts the pupil to pinhole size, or almost so, and thus to a great extent lessens the danger of prolapse of the iris. Under no consideration should atropine or cocaine be used on the eye in this operation. Having produced myosis, and taken all aseptic precautions, an incision is made at the corneo-sclerotic margin, either at its inferior or superior aspect. The superior is more easily exposed, but the inferior has the advantage of removing all putrid matter. The incision being made, the bistoury is held in position and partly turned; this separates the edges of the wound and facilitates the escape of the aqueous humor; in any case this must be slow in order to avoid intraocular hæmorrhage from the sudden reduction of tension. The bistoury is now slowly removed and the edges of the wound allowed to come in apposition and a few drops of the eserine solution instilled. Should there be any tendency to prolapse of the iris it should be pressed back with a sterilized spatula and retained by a bandage and a course of eserine. Should it still tend to escape it becomes necessary to seize it and snip it off with a sharp pair of scissors, thus turning the sclerotomy into an iridectomy The operation is completed by stitching the upper and lower lids of the eye together and thus preventing irritation and injury to the same. The above operation is termed anterior sclerotomy. A posterior sclerotomy is sometimes performed for the same conditions. This is done by making an incision 8 or 10 mm. behind the outer margin of the cornea and the wound made to gape by a slight turn of the bistoury on its axis; this allows of the escape of the aqueous humor. The success following this operation, however, is not as great as that of the anterior sclerotomy.

After-treatment.—This consists in keeping the eyes protected, bathed with cold water daily, and the use of a mild collyrium, two or three times a day, such as the following:

℞ Zinc sulph., ʒ ss.
Aqua rosa, ℥ j.
Aqua, ad q.s., Oii
M. ft. sol., et filtra.

The stitches may be removed from the eyelids on the third or fourth day.

ENUCLEATION OF THE EYEBALL.—This is an ocular operation which is only used as a last resort. When the eye is in such a condition that there is danger of complications which impair the appearance of the patient or endanger other anatomical structures to an invasion of the disease that involves the eyeball, it then becomes necessary to remove the eyeball; in fact, when such conditions exist, enucleation is the only rational treatment, and procedure, in such instances, should not be deferred until the complications have become so serious as to reduce the probable good results of the operation. The indications for the operation may be enumerated as follows:

1. Staphyloma.
2. Suppurative choroiditis.
3. Rupture of eyeball.
4. Accidental injuries.
5. Injuries from heat or chemicals.

1. *Staphyloma.*—Bulging of the cornea which will not yield to milder treatment, both surgical and therapeutic, may in time become a source of annoyance; the protrusion may become large and unsightly; or, the condition may favor septic infection and become very painful. When a staphyloma develops to such an extent that keratocentesis fomentations are inadequate, and there is danger of septic infection, or if septic infection has already invaded the eyeball, the only remedy is enucleation.

All diseases of the cornea that terminate in septic conditions of the eyeball may also be considered indications for the operation in question.

2. *Suppurative Choroiditis* is an infection of the choroid coat which in most cases involves the iris and ciliary bodies before the condition can be arrested. The condition may follow surgical operations, such as paracentesis, sclerotomy, iridectomy, or result from penetrating wounds of the eyeball. *Metastatic choroiditis* is sometimes observed, but in most instances it is of an endogenous origin; the septic material is carried to the choroid from some inflammatory focus by the choroidal vessels, and form septic emboli in the substance of the coat. Besides this

form of choroiditis we may include all septic inflammatory conditions of the inner structures of the eyeball as indications for enucleation of the eyeball.

3. *Rupture of Eyeball.*—Under this topic we will consider ruptures of various intensities, *e. g.*, (*a*) Complete ruptures of all the coats of the eyeball; in this class of injuries we include all injuries to the eyeball that rupture all the coats and accompanied by prolapsus of the structures within, such as the iris, lens, choroid, vitreous humor, or retina. The rupture is usually at the circumcorneal attachment, and the edges may be very ragged and vary in size; (*b*) Partial ruptures of the coats, such as the choroid, without injuring the sclera and conjunctiva; or rupture of choroid and sclera without rupturing the conjunctiva. In all ruptures the sight is impaired, but all ruptures are not indications for the operation. Those ruptures which render the ball susceptible to infection are the only indications generally; most of the other injuries of this kind can be successfully treated otherwise. With these indications we may consider hydrophthalmosis, which is a condition generally followed by more serious complications in the course of time, and in some instances requires enucleation.

4. *Accidental Wounds.*—Injuries caused by accidents often terminate unfavorably, and in such instances it is necessary to remove the eyeball in order to prevent complications. All injuries that leave the eyeball infected, or subject to secondary infection, are indications for the operation.

5. *Injuries from Heat, Chemical or Electric Currents.*—Injuries of this origin are not common in domestic animals, but occur occasionally as a result of accidents. When the injury is caused by strong acid or alkali the superficial structures may be so badly injured as to destroy the sight and allow the inner structures to protrude through the outer coats. If such conditions become obstinate, and secondary infection takes place and involves the inner portion of the ball, it should be removed.

Operation.—The patient must be cast and secured. The operation may be accomplished by the use of a local or general anæsthetic, but we would recomend a general anæsthetic.

The instruments required are an eye-speculum, artery and dissecting forceps, strabismus hook and enucleation scissors.

Technique.—An incision is made in the conjunctiva near the cornea and dissected from the anterior surface of the ball and straight muscles. The ball is then dissected from the orbit with the scissors and the ball pressed out of its socket and the optic

nerve cut as near to the sclera as possible. The muscles and conjunctiva can easily be dissected by rotating the eyeball. All hæmorrhage must be checked with hot water. If the hæmorrhage is extensive, the orbit must be filled with wads of absorbing cotton, saturated in hot water. After all hæmorrhage is arrested, the edges of the conjunctiva may be sutured; this, however, is not necessary; most operators prefer to fill the orbit with wads of aseptic gauze or cotton, and a suitable bandage applied over the orbit.

After-treatment.—The first dressing should be changed two or three hours after the operations, and the orbit washed with a mild antiseptic solution; the dressings should be applied every day for the next three or four days; after the fourth day the wads in the orbit may be omitted.

Complications.—The most common complication is secondary hæmorrhage, which must be controlled with hot water and wadding. Tetanus is another complication that may follow. Cellulitis and meningitis may also be sequellæ; each of these require good drainage and the removal of septic material from the wound, followed by hot fomentations.

SURGICAL ITEMS.

Oöphorectomy — Spaying—Female Castration.— Although this does not interest the city practitioner very much, in some parts of this country it is quite an item to the country practitioner, especially in the great cattle-raising districts. The animal the veterinarian is most frequently called upon to perform this operation on is the ox. I will endeavor to explain why, what season of the year, the age and *modus operandi*, viz.: The spayed animal will carry more flesh and acquire that flesh much faster than the one not spayed and will sell for a better price. As an example, I will relate an experiment to this effect: A bunch of spayed heifers and a bunch of non-spayed heifers were weighed in at equal weight, placed in the fattening pens under the same conditions for six months; were again weighed at the end of this six months, and the spayed heifers weighed 115 pounds per head more than the others, and sold for 15 cents more per cwt. In regard to the season of the year, it has been demonstrated that the best time is from about May 1st to about November 1st.

When you recommend the warm weather to the average farmer the first thing he wants to know is "what about the flies," but no professional man need ever fear the fly in this case, no

matter how warm it may be. As regards the age, the younger the animal the better for it, the easier for the surgeon, and the less danger. The best age at which the heifer should be spayed is six months. As to spaying a pregnant animal, I have seen it demonstrated that it was safe to spay one with a calf not more than four months gone. Of course, it causes abortion, which generally takes place in from 36 to 60 hours, although it may be longer. It matters not whether the animal is in heat or not. As to the milking qualities of the spayed cow, it depends to a great extent on the time she is spayed, according to the latest experiments. If the animal is wanted for milking purposes the correct time to perform the operation is when she is in her prime, which is from three to six weeks after giving birth to the young. In this case they generally remain good milkers on an average of from three to five years.

Modus Operandi.—The first item under this head is the fasting or starving of the animal. They should be fasted for from 36 to 48 hours, or even longer would be better, but all farmers don't look at it that way. The next item is the securing of the animal, which is done many different ways, but will only relate the most important. The one considered the best is the stocks, which should be provided with a door at the front end similar to a dehorning door. This door to be used for the purpose of confining the head of the animal, and at the same time it should be arranged so that it could be opened to allow the animal to walk out the front end when the operation is completed. There should be another door on the left side, which, after the animal's head has been confined, can be let down so as to expose the left flank where the operation is performed. Some veterinarians use the block and tackle and perform the operation through the linea alba; again, some throw them, but in either of these the men that do the rough end of the job are generally worn out before very many operations are performed, whereas when using the stocks it is no harder on those men than is the ordinary work of the farm hand. One of the most important items of this operation is cleanliness or sterilization. You should have an assistant to clip the hair; wash the part with soap and water and then bathe it with a solution of some good antiseptic. Then for the knife, which should be kept in some good antiseptic solution along with the other instruments. Make a puncture into the abdominal cavity. This should be about half way between the last rib and the anterior angle of the ilium and about three

inches below the transverse processes of the lumbar vertebræ. After this is done make an incision about three inches long involving the skin only; into the puncture place one finger of each hand and tear the muscles, peritoneum, etc., instead of making a clean cut of them; into this opening pass your left hand backwards toward the pelvis and proceed to locate the horns of the uterus, which can be easily traced to the ovaries; take off the ovaries with a pair of long handled scissors, making a clean cut. It is best to take off both ovaries before removing the hand; then stitch up the skin only, beginning as high as possible and leaving a drainage at the bottom. Use the continuous suture, which is easily removed. Brush some pine tar over the stitches and allow the animal her own freedom afterwards. Cows that have been used for breeding purposes are sometimes spayed through the vagina, which is about the same as the operation in the mare, which will be described below. Deaths in the ox not quite 1 per cent. (19 out of 2143).

As for the mare, as a general rule we seldom have an occasion to perform this operation, but nevertheless it is done sometimes. It is considered much more dangerous in the mare than any of the other domesticated females. Until a few years ago it was not resorted to except in animals that became unmanageable on the recurrence of heat and who would not breed, or were utterly unsuited for breeding purposes. But a few years ago the breeders of thoroughbreds became a little enthusiastic over the subject of spaying, and as a consequence I was fortunate enough to see quite a number of the operations performed. As is the case with almost every race-horse man, they had a hard-luck story to relate. They claimed that the mare would not run up to her standard during the period of heat by at least two or three seconds, and related that just about the time their mare was in condition to run a record-breaking race, it was just their kind of luck to have her come in heat and spoil everything. Although I saw quite a number of yearling fillies operated on one season with only a few deaths, there were some of them that made first-class runners, but never heard of any of them breaking any world's records. As to the season of the year, it makes little difference, as we generally have nice warm barns in which to keep them. The operation was formerly extensively practised in Europe, the incision being made through the flank, and in a large percentage of them, as the old saying is, "the operation was a success but the animal died." Percentage of deaths in those I saw spayed was about 6 per cent.

(4 out of 72). Prof. Williams relates an occasion where he performed the operation in twenty mares, ranging from two to twelve years, without a single death. The modern surgeon performs the operation through the vagina, and it is simple when once understood. The animal should be properly confined. May use the same stocks that were used in operating on the heifers. Strap all four feet to the floor and place the animal in the slings. The rectum should be emptied before beginning the operation. Cleanliness is the prevailing item always. With the knife make a puncture through the most anterior part of the roof of the vagina just above the *cervix uteri*. Into this puncture place your long handled scissors and open them, thus tearing the parts; pass your hand through this opening and trace the horn of the uterus until you come to the ovary and take off with the ecraseur, or may be twisted off with a pair of forceps. After the second ovary is removed the operation is completed, as there is no suturing done in this case. As to the after-treatment, there doesn't seem to be very much, only that the animal should be put on a soft diet for a fortnight or so.

Next comes the spaying of the bitch. This animal when spayed becomes brighter, more docile, and for a house dog stays at home better, and at the same time never has too much company around and is never found linked with a dog. Some seem to have the idea that they grow very fat and lazy, but I attribute this to the fact that those cases are the ones that are kept in the parlor and occupy the best chair, etc., and are never allowed outside the house to take a little exercise only once or twice a day and then exercise is not the object when they are out. The old bitch that has been bred, may, when her time of heat should come, take the male from habit, so, therefore, I think they should be spayed when young. Fast or starve the animal for 48 hours. Have her properly confined. Shave the seat of operation, which is generally just posterior to the umbilicus, but different veterinarians prefer different regions. Wash the part with soap and water and bathe with a solution of mercuric chloride or some other good antiseptic; with the scalpel make about a two-inch incision down to the peritoneum; then puncture through the peritoneum into the abdominal cavity; into this puncture place your directory and with your curved bistoury make the incision in the peritoneum; place one or two fingers into this opening and locate the horn of the uterus, which can be traced to the ovary; bring the ovary out and take

off with the canine emasculator or whatever method you may select; after both ovaries are removed stitch up the opening and dust some dry antiseptic on it; put the animal on a soft diet for a fortnight or so and remove the stitches about the fourth day.

Spaying of the Pig.—This operation is generally performed by the farmer, and, therefore, doesn't interest the veterinarian to a very great extent; nevertheless, it should not be omitted here. The operation can be performed the same as in the bitch or may be performed through the flank. The animal is laid on an inclined plane with the head downward, and if the operation is performed in the flank either flank will do, whichever is the most convenient.—(*J. K. Jameson.*)

EXTRACTS FROM EXCHANGES.

GERMAN REVIEW.

By ADOLPH EICHHORN, D.V.S., Bureau of Animal Industry, Milwaukee, Wis.

IODIDE OF POTASSIUM AS A PROPHYLACTIC AGENT AGAINST PARTURIENT PARESIS [*A. Kragerud*].—The treatment of parturient paresis with iodide of potassium is already known all over the civilized world. At the same time it proves to be far superior to any other treatment. The author also observed the successful antitoxic effects of the iodide of potassium in milk fever, both by intramammeal and by the intravenous injection. It occurred to him that administered by os as a prophylactic against this disease it might be advantageous. To prove this he selected cows which were predisposed to the disease, standing also in stables in which the disease was very frequent. A few hours before parturition a cow of middle weight received per os two drachms of iodide of potassium, dissolved in a pint of water, which dose in 12 to 20 hours was repeated. Up to this time the author had applied this prophylactic treatment in 100 cases with the best results. A few of the cows showed the first manifestations of the disease after the first dose was given (dullness, capricious appetite, skin changeable from warm to cold, etc.), but after a few hours these symptoms disappeared and the cows remained healthy. In a few stables in which the disease was prevalent for a great number of years all the cows received the iodide of potassium as a prophylactic treatment, and the disease did not reappear after this. There is much rejoicing amongst the farmers at these results

in that by this cheap and easy treatment their best milk cows escape parturient paresis. The author recommends to his colleagues further experimentations in this direction. — (*Berl. Thierärzt. Wochenschr.*)

ATROPHY OF THE OPTIC NERVES IN A HORSE AFTER A GREAT LOSS OF BLOOD [*Walther*].—A gelding, 14 years of age, frightened, slipped and fell on the pavement upon the right chest wall; this was immediately followed by a profuse pulmonary hæmorrhage. The blood which escaped from both nostrils amounted to about 8 quarts. The horse was taken to the stable, which was about 50 yards away. He moved drowsily, was very fearful, both pupils were markedly dilated. A close examination on this day was omitted to prevent new hæmorrhages. On the next day the examination revealed the following: pupils dilated to their extreme, showing a greenish gleam; a reaction of the pupils did not take place, even in the brightest light. The horse is completely blind. The examination with the ophthalmoscope reveals that the refracting parts of the eyes are clear; in the right eye towards the nasal direction from the papillæ are two sharply defined hæmorrhages noticeable in the retina, of the size of a hemp. Both papillæ appear paler than normally. In the course of the following days the papillæ became a greyish white ground color, which partially are traversed by light stripes; they from time to time became smaller. The hæmorrhages in the retina finally appear as yellow spots. After three weeks the horse was discharged as incurable.—(*Zeitschr. f. Veterinaerk.*)

ACTINOMYCOSIS IN A HORSE [*Schwartz*].—April 28th a young horse was brought to the sick-ward with the history that the animal takes its food considerably slower than the rest of the horses and that it has a tumor on the upper jaw. The examination of the buccal cavity revealed positive results. On the upper jaw there was an enlargement, hard in consistency and of the size of a pigeon's egg, which extended from the right corner incisor to the left middle incisor. On its surface there were several somewhat softer spots, which contained tracts, from which a light yellow thick secretion was discharged. The mucous membrane surrounding the tumor was reddened, the blood-vessels of the upper lip much congested. A probing of the tracts and injections of a liquid into them revealed a connection of these, as the injected solution squirted from all the openings. Under the microscope the discharge, with an addition of acetic acid, appeared as a grayish yellow lumpy mass which

presents itself as fungi, also resisting the addition of caustic potash. Further microscopic pictures reveal the club-shaped ray fungi, on which the diagnosis was established. The treatment consisted for the first three weeks of internal administrations of iodide of potassium in the form of pills, and externally tincture of iodine and also Lugol's solution. As there was no improvement obtained by this treatment, a radical operation was decided upon. Preparing for the operation the tumor was infiltrated by Schleich's anæsthetizing method. For the operation the horse was cast and anæsthetized by equal parts of chloroform and ether. The tumor was then removed by the aid of a knife and sharp spoon, the diseased parts of the bone removed and scraped, in which procedure it was also found necessary to extract the right middle incisor. Following this a rapid recovery took place, and repeated examinations showed satisfactory results. The operation required three-quarters of an hour's time. Cases of actinomycosis in the horse are very rare and therefore worthy of report.—(*Berl. Thierärzt. Wochenschr.*)

QUININE AGAINST HÆMOGLOBINURIA OF CATTLE [*von Hellens*].—At the veterinary meeting at Helsingfors, Finland, von Hellens gave some communications on the subject. Since the year of 1895, the author observed the very favorable effects of the sulphate of quinine in hæmoglobinuria of cattle, recommending this treatment to his colleagues. This was met with approval, and as a consequence v. H. was enabled to collect extensive statistics on the cases. Separating all the cases from which one could not determine the exact course and termination of the disease, there remain for the statistic 591 cases, of which 475 (80.4 per cent.) recovered, and 116 (19.6 per cent.) succumbed. These results are certainly very satisfactory, considering that by the other treatments the death rate was 30-50 per cent. But it will become still better when one separates those 32 cases, in which the quinine treatment was not introduced in proper time, the disease being too far advanced. Deducting these 32 cases there remain 559 animals, of which 475 (85 per cent.) recovered and 84 (15 per cent.) died. The rate is still more favorable when it is considered that many of the deaths occurred in those cases where insufficient doses were given. Regarding the dose, the author recommends the administration of 20.0 gm. of quinine. Smaller animals 15.0 gm., while large, or those more severely affected, receive 40.0 gm. (twice 20.0 gm).—(*Svensk Veterinartides Krift.*)

ITALIAN REVIEW.

By Prof A. LIAUTARD, M. D., V. M.

PROBABLE PARALYSIS OF THE LEFT BRACHIAL PLEXUS [*Prof. Lanzillotti-Buonsanti*].—This diagnosis was made by the author in the presence of the symptoms which were exhibited by the patient and confirmed, it may be said, by the successful treatment which was resorted to. A five-year-old had been bought recently at auction, and after two weeks was returned as being incurably lame. There was no other history, and when seen by Prof. N. L.-B. there was marked atrophy of the shoulder muscles; a small swelling on the inner side of the carpus, rather œdematous in nature; the leg held in abduction and semi-flexion, with a tendency to pointing. Sensibility was normal over the whole leg to punctures of needles. All motions were extremely difficult, the horse when called to walk being unable to raise the right leg, or if urged to do it dragged it along the floor. Trotting was perfectly impossible. When left alone, the animal assumed the same immobile position, the leg in abduction, semi-flexed and somewhat pointing. The dropping of the elbow, classical symptom of radial paralysis, was absent. After a few days of rest, an experiment was made on the horse, he being submitted to the effects of an electric current for ten minutes, on the shoulder, on the arm and the left pectoral muscles. Immediately after, the animal was asked to walk and to trot, but did not present any peculiarity. The treatment by the use of subcutaneous injections of nitrate of strychnia was then decided upon. Of these the animal received three. The first gave no result and but little effects of strychnia were noticed. At the second the effects of the drug were very severely marked, while at the third they were quite mild. Improvement in the condition of the patient was noticed only after the second injection, and from that time kept on increasing until final recovery was complete in just three weeks.—(*Clinica Veter.*)

CALCIFIED CYSTS OF THE EXTERNAL FACE OF BOTH FORE CANNONS [*By Prof. Lanzillotti-Buonsanti*].—These tumors did not at present interfere with the use of the animal, but the owner thought they might later, perhaps, lame him and he wished them removed, if possible. They were about as big as a hazel nut, ovoid in form; the left one was hard and movable, the right, hard also, seemed to be adherent to the under tis-

sues. The diagnosis established, the author proceeded to the removal, casting the horse on the left side to operate on the right leg first and *vice versa*. In removing the right tumor and isolating it from the plantar nerve and artery, upon which it passed, a ramification of the artery which enters it had to be ligated. The left tumor is smaller and covered by the skin ; it seemed to have started from an indurated spot of the skin. The plantar artery passed at its base and sent four little branches into it. The artery was quite large. The plantar nerve was adherent to the base of the tumor, and careful dissection was necessary to take it off. The wounds after being disinfected were sutured and dressed antiseptically. Recovery final in three weeks.—(*Clinica Veterin.*)

Upon Several Cases of Syndesmotomy for Treatment of False Dislocation of the Patella [*By A. Malgarini*].—For cases of the superior luxation of the patella as causes of cramps in bovines, the author admits but one proper treatment, and that is the operation of syndesmotomy. He records briefly 18 cases, in which the operation has been performed by him, and always successfully and without serious complications —in fact, without any. The cases were of various nature, sometimes unilateral, on the right or on the left side, and then, again, in others, both legs were affected. In these last he generally allowed a number of days to elapse before operating on the second leg. Of those 18 cases, fourteen were cicatrized without suppuration, in the other four, small collection of pus occurred at the seat of the operation ; but these subsided without trouble, with little attention and care.—(*Clinica Veterin.*)

False Rabies as a Mania of Maternity [*Dr. E. Stragia.*]—This simple case is that of a fat setter slut, which, having bitten a servant passing close to her, was suspected of rabies. The animal was known by the author, as he had operated upon her some time before for a large sebaceous cyst of the left elbow. The dog slobbered some at the mouth, growled, barked and assumed a threatening aspect to those who approached her. For the last eight or nine days she has been more quiet than usual ; her mammæ had become considerably swollen. Since three days she has lost her appetite. The year previous she had presented somewhat the same symptoms, but in a much milder form. Taking in consideration that for two years the slut had not been covered, that during several years previous all her sucking pups had died, and that she had already presented similar symptoms, the author came to the con-

clusion that these symptoms belonged to the class of false rabies, and were due to a "mania for maternity." A little change in her hygiene and care, with purgatives, improved her in two days, and cured her entirely in a week.—(*Il Nuovo Ercolani.*)

MORPHIA IN COLICS OF HORSES [*Dr. T. Lorenzetti*].—Under this title, and after entering into general remarks upon the use and the effects of morphia, reviewing the observations of several authors, the author gives in detail the records of ten cases where he had had recourse to morphia as an essential part of the treatment, adding to it according to the indications other means, such as laxatives, rectal injections, frictions, etc., in cases of colicy manifestations. The first two cases were fatal, one from extensive enteritis, the other from rupture of the spleen. The other eight were successful, the last one showing special interest as being one in which a six-months-old filly had received an abdominal wound, with protruding organs and ligature, etc., and was saved by the use of morphia. In his conclusion Dr. Lorenzetti says: (1) Morphia is the hypnotic *par excellence*, for horses, notwithstanding the contrary opinions of others; (2) In doses of 20 to 50 centigrammes in subcutaneous injections, it gives rise to no bad effects, but, on the contrary, produces a beneficial and short sleep; (3) In general practice it is the agent (*principle*) for the treatment of colics in horses, without the uses of other drugs; (4) That when morphia fails, a serious or fatal prognosis is, in general, imposed.—(*Il Nuovo Ercolani.*)

ECHINOCOCCI IN THE ADIPOSE TISSUE OF A STEER [*C. de Benedectis*].—After recalling the fact that already two cases of echinococci were reported by him, one in the extensor muscles of the forearm of a pig, and the other in the pleura of a steer, the author gives the description of a post-mortem examination of a fat steer where in the adipose tissue a great number of vesicles of various sizes were found, in which the typical nature and mode of formation of the parasites were readily made out. This case of Dr. B. confirms the remarks already made by writers, such as Macé, Perroncito, Neuman and others that echinococci can be found in every part of the organism.—(*Il Nuovo Ercolani.*)

TWO CASES OF JAUNDICE IN SWINE DUE TO HELMINTHS [*C. de Benedectis*].—On certain occasions the author has been obliged to seize and isolate a number of pigs which were affected with jaundice. Desirous to account for the appearance of such disease among a number of them, he made careful examination

and found that in two the true hepatogeneous jaundice was due to obstruction to the escape of the bile in the intestines. In both he found a lumbricoid entered partly into the ductus communicus choledicus and closing it so completely that no escape of bile could take place. The parasites were by the portion not in the canal floating in the cavity of the duodenum. The case is certainly very interesting.—(*Il Nuovo Ercolani.*)

VERMINOUS BRONCHITIS IN CATTLE [*Dr. Umberto de Mia*].—Notwithstanding the fact that the presence of strongylus in the bronchia of adult large ruminants is denied by some, the author made out that diagnosis in a large herd of young and adult animals which had pastured, lived and were now stabled together. One of the adult animals being the sickest and very anæmic was destroyed, and the bronchia were found containing a very large quantity of *strongylus micruri.* The treatment which was recommended varied according to the cases and their condition. Two animals which were considered not worth treatment received a tracheal injection of a mixture of olive oil, spirits of turpentine, oil of crede and phenic acid. Others were placed under the Neumann mode of treatment, viz.: assafœtida, empyreumatic oil and mucilaginous decoction. Later on alteratives were administered—iodine, iodide of potassium, etc.—all these various forms of therapeuty were used in tracheal injections, except the Neumann, which was given by tablespoonfuls. During the curative treatment the animals were kept isolated, and when the disease had disappeared minute disinfection was carried out for the stables where they were kept and advice was given to the owner to not put cattle in the suspicious fields where they probably caught the germs of the disease.—(*Giorn. della R. T. and Acad. Vet. Ital.*)

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M. D., V. M.

FRACTURED RADIUS IN A PREGNANT MARE [*John Connochie*].—The case is that of a mare in foal, which from a kick had sustained a simple fracture of the radius, near the lower extremity of the bone. On account of her condition, and being a good brood mare, an attempt at treatment was decided upon. The leg was properly bandaged and padded, leather straps and splints were resorted to, and the mare placed in slings, with all possible precaution to prevent skin troubles. The mare was

well fed, laid on flesh, and towards the twelfth week of the treatment she was safely delivered of a well nourished and perfectly formed foal. At the end of the thirteenth week the splints were removed, and then the mare was ordered short walking exercises, after which she was replaced in slings. After a short while she was put in a loose box, and then turned to pasture. Recovery was perfect, except that on account of the seat of the injury, the knee is perfectly ankylosed.—*Vet.*) *Journ.*)

SEPTIC PNEUMONIA [*C. Sutton*].—Under this title the author records the case of a gelding which presented symptoms of colic, which in his estimation were due to impaction. Although placed under treatment, the animal did not improve, but exhibited symptoms of choking, and after a few days had a thick fœtid creamy discharge from the nostrils, which was not satisfactorily accounted for. Notwithstanding the fact that the animal fed more or less, he gradually wasted away, and finally quietly laid down and died. A large abscess pressing and constringing the œsophagus close to its entrance to the stomach was found. The œsophagus showed signs of disease of long standing; there were other abscesses with inspissated pus and septic matter. Those were the cause of vomition. The stomach had a perforation, the mucous membrane having been involved for some time, the serous only recently. The lungs were the seat of septic pneumonia.—(*Vet. Journ.*)

UNUSUAL NUMBER OF TAPEWORMS IN A DOG [*H. Taylor*].—The record of the number of these parasites in dogs has just been broken. According to Neumann, the number of *tænia serrata* which Bertolus and Chauveau have found in the dog varied from one up to sixty-four—these being exceptional figures. In an Airedale terrier the author gave 35 minims of tenalin in water, and in twenty minutes the dog evacuated a large quantity of fæces and a tangled mass of tapeworms, which on being teased out and counted was found to be composed of sixty-six tænia, all belonging to one species, *tænia serrata*.—(*Vet. Journ.*)

VOMITION IN A HORSE [*A. Spicer*].—All horses that vomit do not have ruptured stomachs, and some do recover. One more case is added to those that are already recorded. It is that of a gelding which after a heavy meal of maize and middlings was taken with abdominal pains, during which he also exhibited symptoms of vomiting. The attacks were repeated at intervals of eight or ten minutes. The nose was not drawn into the

chest, and there was little muscular effort. The contents of the stomach were ejected entirely through the nostrils and consisted of a yellow fluid with semi-digested food, smelling strongly of fermented maize. The treatment adopted was the administration of aloes and strychnia. The pains subsided in a short time. After a couple of days the bowels moved and recovery was complete.—(*Vet. Journ.*)

A PROSTATIC TUMOR [*J. H. Carter*].—A diseased condition of the prostate is not always easy to be made out, and the diagnosis may be rendered difficult, especially by the fact if ladies are the owners, and delicate questions cannot be asked. Such was undoubtedly the case in the setter which the author was called to treat, and in which he first made a diagnosis of balanitis. The animal was placed under treatment and for a while seemed to improve. But after a while he grew worse. He was in fair condition bodily and to all external appearances in good health. On micturation, he had copious discharge of thick pus, probably some four ounces in quantity, followed by normal urine. At other times the urine would be discharged first, followed by the pus; or, again, the pus would be streaked with blood. The animal remained under treatment for a month without result, and returned to the owner. Four months after he was brought back to Mr. J. H. C. to be destroyed. At the post-mortem, on opening the abdominal cavity, a large growth was found, of the size of a fair-sized pineapple, which was attached to and communicating with the prostate gland at the neck of the bladder. Section of the growth revealed a great number of cysts filled with pus.—(*Vet. Journ.*)

A THORACIC TUMOR [*J. H. Carter*].—A black St. Bernard dog, some six months ago, showed a swelling on the left side of the chest, which gradually increased in size, until it had reached that of a child's head, when he was brought to the author for treatment. Stimulating liniment externally and iodides internally failed to bring relief, and the last request of the owner was to kill or cure him. The tumor seemed to have reached its extreme growth. Explored with puncturing needle, instead of pus, a dirty brown grumous material escaped, and a free incision to introduce the finger has, for result, only to obtain the sensation of a hard, gritty substance, resembling bony spiculæ. Extirpation is decided upon. The dog well prepared and chloroformed, a bold incision is made, the skin dissected, but there the operation has to stop, as all attempts to isolate it from its attachments are impossible, the growth extending too

deeply; the fingers introduced in it to explore it, enter the thoracic cavity. The animal is killed. At the post-mortem it is made evident that the tumor penetrated the walls of the chest and invaded the left thoracic cavity, so much so as to displace the pulmonary lobes. Section of the tumor shows in its centre a quantity of broken down bony débris and lowly organized tissue. The heart was enlarged and flabby. Spleen half healthy and half œdematous. It is supposed that at some time or other the animal had been kicked on the left side, had several ribs broken, and that the result was the formation of the tumor. —(*Vet. Journ.*)

TROUBLESOME MONKEY CURED BY OOPHORECTOMY [*F. Hobday, F. R. C. V. S.*].—Monkeys have sometimes the privilege of becoming pet animals, and, instead of passing their life behind the bars of a cage or only enjoying liberty when tied up to a chain, they may, if they know how to behave, have greater joys in life; but, unfortunately, they are liable to many objections, and their sense of generation is in some instances likely to render them improper and even disgusting for their human owners; thus, they are exposed to operations which have for object to change their nature, their desires, their ideas, perhaps. The author records the case of a large female, between three and four years old, which had become indecent in her behavior, and even vicious, with attempts to bite. She had been in heat for several months, her external genitals became much enlaıged and a quantity of slimy fluid was escaping. With all antiseptic cares while chloroformed she was operated upon and both ovaries removed. The wound was carefully sutured, dried and covered with iodoform collodion. Recovery was perfect; and the animal became much more friendly than she had ever been.—(*Vet. Journ.*)

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BOVINE OBSTETRICS. By M. G. DeBruin, Instructor of Obstetrics at the State Veterinary School in Utrecht. Translated by W. E. A. Wyman, M.D.V., V.S., Milwaukee, Wis. New York: W. R. Jenkins, 851 Sixth Ave.

The well-known veterinary publishing house of Jenkins is assuredly doing its part toward building up English veterinary literature, as every little while there is turned out by its presses some work of an American author or translator, without which enterprise there would have been lost to us very many important works which now are thumb-worn from frequent reference.

Last month we had the privilege of referring to the original work on materia medica by Dr. Winslow; this month we have upon our desk the authorized translation of Prof. DeBruin's treatise on bovine obstetrics, by Dr. W. E. A. Wyman, of Milwaukee, whose name has become familiar to readers of veterinary literature through his work on "Clinical Diagnosis of Lameness in the Horse," and his numerous contributions to the periodical press. DeBruin occupies a high position as a scientist and bovine obstetrical specialist, a man well qualified to put forth such a pretentious treatise, which was issued as a section of the book on "Veterinary Surgery and Obstetrics," by Profs. Bayer and Fröhner.

Dr. Wyman has arranged the contents of the work in a very comprehensive manner, placing them into sections, as follows:

Normal Pregnancy: (1) Changes taking place in the uterus from conception to development of youug; (2) the fœtus and its annexes. Normal Birth (eutokea): (1) The genital passage; (2) causes, course, and treatment of normal birth; 3) involution of the uterus. Abnormal Birth: (1) Diseases and accidents of Pregnancy; (2) diseases of the fœtus and its annexes; (3) extra-uterine pregnancy. Abnormal Parturition (Dystokia): (1) Abnormalities in the mother; (2) abnormalities of the fœtus. Obstetrical Operations: (1) operations on the parent; (2) repositions and operations on the fœtus. Dismembering of the Fœtus (Embryotomy): Auxiliaries in the Study of Mechanical Obstetrics. Diseases during and following the act of Birth: (1) of the Mother, (2) of the Calf.

A veterinarian, particularly if his location brings him in contact with obstetrical practice, who makes any pretence toward being scientific and in possession of modern knowledge upon this subject, will not be without this excellent work, as it is really a very valuable treatise. It contains nearly 400 pages, numerous illustrations, and is put together in Jenkins' best style. R. R. B.

SOCIETY MEETINGS.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK COUNTY.

The above-named society was called to order in the lecture-room of the New York-American Veterinary College on the evening of Nov. 6, by the President, James L. Robertson, and, although the attendance was small—Drs. Ryder, Lellman,

Peary, Delaney, McCully, Cochrane, Robertson, DuBois, Bell, and a number of students of the college—the proceedings were very interesting, and mutually instructive, and it seemed as though an interest was springing up which promises well for the society's future.

Dr. Wilfred Lellman presented some interesting specimens and gave very full and accurate histories of the cases. First, the heart of a dog which had died of endocarditis, the specimen showing the thickened semilunar and tricuspid valves, with stenosis of the pulmonary artery. The doctor had treated this patient for some time, and had been able by auscultation to diagnose through the heart sounds the insufficiency of the valvular structures, and had advised against excessive exercise. A long run was sufficient to bring on a death which he thought might have been delayed for several years possibly. His theory of the cause of the condition dates back to the severe distemper from which he suffered in his youth, he being about seven years old at the time of his death. Another specimen exhibited was the two navicular bones from the front feet of a horse which he had been called to treat, and which showed ulceration of the cartilage, and even into the bony structures. The interest in this case, to the doctor's mind, resided in the fact that the feet were wide and flat, as against the popular notion that navicular-thritis is only found in the narrow, contracted foot.

Upon this latter specimen an extended discussion took place, as to the means of diagnosis of the disease, the various forms of treatment, especially the neurectomies, and the prognosis from a practical standpoint.

But those present did not confine themselves to the subject of navicular disease, but digressed in all directions, from trephining the sinuses to the removal of the lumbricoid from puppies.

For the December meeting a surgical clinic will occupy the evening. Two subjects will be submitted for the demonstration of various surgical procedures. Dr. Ryder will perform vaginal ovarectomy and tarsal tenotomy; Dr. Clayton, median neurectomy; Dr. Peary, peroneal tenotomy; Dr. Delaney, a dental operation, and others will demonstrate some practical method of performing some of the operations that the city practitioner is daily called upon to do, if time will permit.

We are sincerely glad to see this evidence of a rekindled interest in the society, and hope that it is but the beginning of many such pleasant occasions.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

President Winchester has appointed the following committees for the term of his office:

Executive.—D. E. Salmon (Chairman), Washington, D. C.; H. D. Hanson, New York; M. H. Reynolds, Minnesota; C. A. Carey, Alabama; G. A. Johnson, Iowa; W. H. Hoskins, Pennsylvania; T. E. Budd, New Jersey, and the officers *ex-officio.*

Diseases.—E. M. Ranck (Chairman), Pennsylvania; J. Law, New York; A. T. Peters, Nebraska; L. Frothingham, Massachusetts; R. R. Dinwiddie, Arkansas.

Intelligence and Education.—E. B. Ackerman (Chairman), New York; T. B. Cotton, Ohio; W. J. Hinman, Massachusetts; G. W. Dunphy, Michigan; J. C. Robert, Mississippi.

Finance.—R. C. Moore (Chairman), Missouri; W. H. Kelly, New York; C. Curtis, Rhode Island.

Publication. — M. H. Reynolds, Minnesota (Chairman); Roscoe R. Bell, New York; J. J. Repp, Iowa; L. Van Es, Alabama; R. P. Lyman, Connecticut.

Resolutions.—T. Butler, North Carolina (Chairman); D. E. Salmon, District of Columbia; S. Brenton, Michigan; S. B. Nelson, Washington; G. H. Berns, New York.

Army Legislation.—L. Pearson, Pennsylvania (Chairman); R. S. Huidekoper, New York; W. H. Lowe, New Jersey; A. Peters, Massachusetts; M. E. Knowles, Montana.

OHIO STATE VETERINARY ASSOCIATION.

The annual meeting of this association will be held at the Veterinary Department of the Ohio University, Columbus, Ohio, Jan. 14 and 15. One of the special features of this session will be its clinics, which last year very far exceeded our expectations, and the present committee hope to equal or excel that programme. The fact that our State University contains a Veterinary Department should interest every veterinarian a citizen of this State with a desire to know more about it; and we well know that the anatomical and pathological exhibit alone will well repay for the trouble of a visit. Then there is the Biological Hall, as well as one of the finest equipped dairy and cheese-making schools in the United States. Every veterinarian is invited to the meeting, whether he be a member of the association or not; and if having anything of interest to the profession they are cordially invited to present it.

WM. H. GRIBBLE, D.V.S., *Secretary.*

WASHINGTON C. H., OHIO, Nov. 15, 1901.

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The annual meeting of this association will be held at Trenton on January 9, 1902, and it is expected that there will be a large attendance and a full and interesting programme.

GEORGE W. POPE, *Secretary.*

CLEVELAND VETERINARY MEDICAL ASSOCIATION.

The veterinarians of Cleveland, Ohio, have organized an association bearing the above title, and at a recent meeting the following officers were elected for 1901-1902: President, E. P. Shaffter; Vice-President, E. H. Shepard; Secretary-Treasurer, A. E. Cunningham.

NEWS AND ITEMS.

DR. R. C. MOORE officiated as veterinarian for the Kansas City Horse Show Association.

DR. WM. MCEACHREN, formerly of Windsor, Ont., is now located at Louisna, Mo.

DR. W. S. CASS, of St. Louis, paid Kansas City a visit during the latter part of October.

THE KANSAS CITY VETERINARY COLLEGE reports an enrollment of over eighty students this session.

THE VETERINARIANS TO THE NATIONAL HORSE SHOW, held at Madison Square Garden last month, were Drs. Wm. Sheppard, Thomas G. Sherwood and J. Elmer Ryder.

THE veterinarians attending the Missouri State Veterinary Society and the Missouri Valley Veterinary Medical Association, visited the Kansas City Horse Show in a body on Wednesday evening, October 23d, over eighty in number.

DR. L. H. HEMPELMAN, of St. Louis, Mo., graduate of the A. V. C., who is now engaged in the practice of human medicine, was enjoying his honeymoon in New York City in November, and made a pleasant call upon his veterinary *alma mater.*

NEBRASKA was well represented at the meeting of the Missouri Valley Veterinary Association, the following being in attendance: Dr. H. L. Ramacciotti, Omaha; Dr. J. D. Sprague, David City; Dr. J. S. Anderson, Seward; A. T. Peters, W. A. Thomas, and T. S. Gains, Lincoln.

BUREAU OF ANIMAL INDUSTRY.—The London *Times* pays a glowing tribute to our great animal bureau, as indicated in the

following cablegram to the New York *Times*: "London, Nov. 11.—The *Times* to-day prints a notice of the annual report of the United States Bureau of Animal Industry. It says that though the work appears somewhat late, there can be nothing but praise for this grand volume, which is worthy of the greatest Bureau of Animal Industry in the world. The contents show that the interests of American stock breeders are well looked after by the Department of Agriculture at Washington. The numerous articles in the volume, says *The Times*, are all of high practical interest."

JAMES BRODIE GRESSWELL, F.R.C.V.S., of Louth, England, was sued by a farmer named Nixon for £45 : 5s. damages for neglect and improper castration of four colts, and the former put in a counter-claim for £2:13:8 for professional services. It was brought out on the trial that the plaintiff employed the doctor to perform the operations, but that instead of his doing the work he sent an assistant, and neither of them being personally known to the plaintiff he presumed that the operator was Dr. Gresswell. The instrument used was the "Reliance," and the result was that all four colts bled profusely, one being dead in the morning, another had chronic paraphimosis, and the other two were greatly weakened. Being unable to secure the attendance of the operator when notified of their condition on the following day another veterinarian was called in. The jury found for the plaintiff for £26:6s., and disallowed the counter-claim.

CHARLES H. ORMOND, D.V.S., of Milwaukee, Wis., was killed at the farm of George Wing, Nashotah, that State, the latter part of November. He was called to the farm to see a lame horse, and while examining the foot the horse suddenly kicked, striking the doctor on the top of the head, the calk of the shoe penetrating one of the cranial bones, resulting in his death a few hours afterwards. He was hurled against the side of the stall, but was conscious, which he gradually lost. Dr. Ormond was a graduate of McGill, class of '81, and had practiced in Milwaukee ever since, where he was highly esteemed professionally and personally. His father, William Ormond, was also a veterinarian, and was supposed to have been murdered three years ago, having been found dead in a field in Minnesota. Notwithstanding the most strenuous efforts of his son, the mystery surrounding his death was never cleared up. Dr. Ormond, Jr., was 45 years old, and unmarried.

MR. MULE RECEIVED THE DEATH PENALTY.—Odd things happen in our southern sections, and not the least unique take

place in Georgia, where the "Cracker" obtains and the watermelon grows as big as a rain barrel. From Richmond county comes news of the legal execution of a mule. "It appearing to me from the representation of Foster Sherlock, a policeman of the county of Richmond, that a certain domestic animal, to wit: a small black mule, about 13½ hands high, weighing about 750 pounds, now on the premises of J. W. Clapp, near Martinet, in Richmond county, Georgia, is glandered and diseased beyond recovery and a menace to all other domestic animals in the county: It is ordered that in accordance with section No. 1755, of the Code of Georgia, that, first, said mule described as aforesaid be killed by said Foster Sherlock. Second. That the remains of said mule as recommended by J. A. Oliphant, the physician employed by the county of Richmond, be cremated. H. H. Nichols, J. P., 1269 Dist. G. M. September 25, 1901." The mule was put to death immediately after the sentence was pronounced.

IN A NUTSHELL.—The automobile show, which has just left the Madison Square Garden, lacked the element of interest that makes the Horse Show fascinating. It is not easy to get enthusiastic over machines, inanimate, unresponsive and unintelligent. The motor carriage is nothing but a machine, and it lacks all the qualities which develop genuine and lasting affection in the owner. But the horse is a vital intelligence. He is another living creature, and the tie which connects living things binds him to man. Whoever heard of an automobile straining every nerve to do the will of its driver and responding to the mood of its rider? Why, the smallest child prefers a live kitten to a wax doll, even though the doll can say "mamma" and "papa" and can walk when you wind it up. The enthusiastic crowds fill the Garden this week because there is an exhibition of life there. It is customary to talk about the show of men and women in the boxes. And that does very well for those who want to say smart and cynical things. But they know that they are making only superficial comments. Of course, thousands go because they believe that is "the thing" to do. But they are not those for whom the show is held. The multitudes go to pay their tribute of affection to an animal which has for centuries received and deserved the confidence of men. And it should be encouraging to the pessimists to know that even in this town, sated with novelty, there should remain enough of genuine interest in this splendid animal to make the Horse Show worth while.—(*Brooklyn Eagle, Nov 19.*)

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R. W. E.

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